

MARINE OBSERVATION AND STATION ABSTRACT

NOAA SHIP KA'IMIMOANA

SHEET NO. 1 OF

PROJECT NO: KA-02-01

TAO MOORING LINES: 95W/110W

CHIEF SCIENTIST: MEINING

MONTH/YEAR: FEB/MAR/APR 2002

GMT TIME OF OPERATION			GPS POSITION		COURSE (°T.)	SPEED (kts)	DEPTH (meters)	DESCRIPTION OF OPERATION	EVENT NUMBER
JULIAN DATE	TIME	TIME ZONE	LATITUDE	LONGITUDE					
055	2006	+8	39° 01.56' N	124° 04.88'			754	CTD IN THE WATER	
055	2042	+8	39° 01.47' N	124° 05.23' W				CTD AT THE DEPTH (742 m)	
055	2143	+8	39° 01.14' N	124° 06.41' W			845	CTD AT THE SURFACE	
055	2022	+8	39° 01.53' N	124° 05.15'			770	CTD IN THE WATER & DESCENDING	
056	2006	+8	35° 40.66' N	122° 05.67'				TRANSducer IN WATER	
056	2024	+8	35° 40.89' N	122° 05.52' W			^{DR} 1	" OUT OF WATER	
								" IN WATER	
056	2041	+8	35° 41.28' N	122° 05.12'				" OUT OF WATER	
056	2048	+8	35° 41.58' N	122° 05.15' W				" IN WATER	
056	2100	+8	35° 41.56' N	122° 05.11' W				" OUT OF WATER	
056	2108	+8	35° 41.80' N	122° 05.97' W				IN WATER	
056	2129	+8	35° 41.86' N	122° 04.83' W				OUT OF WATER	
056	2207	+8	35° 37.60' N	122° 05.85' W				IN WATER	
056	2220	+8	35° 37.55' N	122° 06.02' W				OUT OF WATER	
056	2229	+8	35° 37.90' N	122° 06.05' W				IN WATER	
056	2245	+8	35° 37.86' N	122° 06.44' W				OUT OF WATER	
056	2308	+8	35° 39.57' N	122° 06.14' W				IN WATER	

* CTD stayed on surface for 20 min.

MARINE OBSERVATION AND STATION ABSTRACT

NOAA SHIP KA'IMIMOANA

SHEET NO. 2 OF

PROJECT NO: KA-02-01

TAO MOORING LINES:

95W / 110W

CHIEF SCIENTIST: MEWING

MONTH/YEAR:

FEB / MAR / APR - 2002

GMT TIME OF OPERATION			GPS POSITION		COURSE (°T.)	SPEED (kts)	DEPTH (meters)	DESCRIPTION OF OPERATION	EVENT NUMBER
JULIAN DATE	TIME	TIME ZONE	LATITUDE	LONGITUDE					
056	2320	+8	35° 39.63-N	122° 06.25-W	v/c	v/s	-	FIRE BUOY RELEASE	
057	0000	+8	35° 39.67 N	122° 06.03-W	v/c	v/s	-	GRAPPLED BUOY	
057	0015	+8	35° 39.64 N	122° 06.03 W	v/c	v/s	-	BALLSETS ON DECK	
057	0029	+8	35° 39.48 N	122° 06.01 W	v/c	v/s	-	MOORING UNIT ON DECK	
057	0101	+8	35° 39.4' N	122° 05.9' W	v/c	v/s	-	CTD IN THE WATER	
057	0135	+8	35° 39.7' N	122° 06.3' W	v/c	v/s	1750	CTD AT DEPTH (¹⁴⁰⁴ 482 m)	
057	0230	+8	35° 40.0' N	122° 06.6' W	v/c	v/s	-	CTD AT THE SURFACE	
057	1657	+8	34° 17.02' N	119° 51.46' W	"	"	371	COMMENCED BUOY OPS.	
057	2056	+8	34° 16.91-N	119° 51.49-W	"	"		TRANSDUCER OUT OF WATER	
057	2058	+8	34° 16.91-N	119° 51.48-W	"	"		NEW TRANSDUCER IN THE WATER	
057	2226	+8	34° 16.85-N	119° 52.23-W	"	"		TRANSDUCER OUT OF WATER	
057	2302	+8	34° 17.11-N	119° 52.06-W	"	"		FIRE BUOY RELEASE	
057	2315	+8	34° 17.18-N	119° 51.49-W	"	"		GRAPPLED BUOY	
057	2340	+8	34° 10.08-N	119° 53.53-W	"	"		MOORING UNIT ON DECK	
065	2020	+7	12° 00.12' N	111° 02.06' W	"	"		CTD IN THE WATER (1048 m)	KA1011
065	2044	+7	12° 00.71' N	111° 02.21' W	"	"		CTD AT DEPTH (1048 m)	

MARINE OBSERVATION AND STATION ABSTRACT

NOAA SHIP KA'IMIMOANA

SHEET # 3 OF

CRUISE #: KA-02-01

TAO MOORING LINES: 9SW/110W

CHIEF SCIENTIST: McPhaden/Moore

MONTH/YEAR: MARCH 2002

TIME OF OPERATION			GPS POSITION			COURSE (°T)	SPEED (KTS)	DEPTH (M)	DESCRIPTION OF OPERATION	EVENT #
JULIAN DATE	GMT TIME HH:MM	TIME ZONE	LATITUDE DEG° MM.SS	LONGITUDE DEG° MM.SS						
063	18:19	+8	21° 03.44' N	113° 33.36' W	161	12.2	3553	LAUNCHED WX BALLOON #63246015		
063	22:39	+8	20° 16.31' N	113° 19.22' W	000	<1	3450	CTD IN THE WATER		
063	23:56	+8	20° 16.28' N	113° 19.32' W	000	<1	3467	CTD AT DEPTH (497m)		
064	00:15	+8	20° 16.28' N	113 19.47' W	000	<1	3484	CTD AT SURFACE		
065	1757	+7	12° 23.59' N	111° 08.26' W	164	11.4	3480	LAUNCHED WX BALLOON #127551806		
065	2020	+7	12° 00.12' N	111° 02.06' W	—	—		CTD IN THE WATER	KA 1011	
065	2044	+7	12° 00.71' N	111° 02.21' W	—	—	3269	CTD AT DEPTH (1048m)		
065	2315	+7	12° 01.22' N	111° 02.02' W	—	—		CTD AT SURFACE		
065	2346	+7	11° 35.70' N	110° 56.31' W	165	10.5	—	LAUNCHED WX BALLOON #127551809		
066	0349	+7	11° 00.32' N	110° 48.20' W	V/C	V/S		CTD IN THE WATER	KA1 0021	
066	0417	+7	11° 01.20' N	110° 48.45' W	V/C	V/S	3745	CTD AT DEPTH (1108 m)	↓	
066	0454	+7	11° 01.39' N	110° 48.39' W	V/C	V/S	3749	CTD AT SURFACE	↓	
066	0554	+7	10° 53.68' N	110° 46.66' W	164	9.9	2878	LAUNCHED WX BALLOON #127551813		
066	1137	+7	10° 00.16' N	110° 34.78' W	V/C	V/S	—	CTD IN THE WATER	KA1 0031	
066	1201	+7	10° 00.27' N	110° 34.99' W	↓	↓	3667	CTD AT DEPTH (1000m)	↓	
066	1238	+7	10° 00.47' N	110° 35.20' W	↓	↓	—	CTD AT THE SURFACE	↓	
066	1200	+7	10° 00.27' N	110° 34.99' W	V/C	V/S	—	WX BALLOON #127551805 LAUNCHED		
066	1755	+7	9° 09.35' N	110° 23.35' W	165	10.4	3642	WX BALLOON #127551810 LAUNCHED		
066	1856	+7	8° 59.94' N	110° 21.14' W	V/C	V/S		CTD IN THE WATER	KA1 0041	
066	1921	+7	9° 00.23' N	110° 21.36' W	↓	↓	3611	CTD AT DEPTH (1005)	↓	

MARINE OBSERVATION AND STATION ABSTRACT

NOAA SHIP KA'IMIMOANA

SHEET # 4 OF

CRUISE #: KA-02-01

TAO MOORING LINES: 95/110

CHIEF SCIENTIST: McPhaden/Moore

MONTH/YEAR: MARCH 02

TIME OF OPERATION			GPS POSITION		COURSE (°T)	SPEED (KTS)	DEPTH (M)	DESCRIPTION OF OPERATION	EVENT #
JULIAN DATE	GMT TIME HH:MM	TIME ZONE	LATITUDE DEG° MM.SS	LONGITUDE DEG° MM.SS					
066	1954	+7	9° 00.55' N	110° 21.46' S			3620	CTD AT THE SURFACE	KA1 0041
066	2120	+7	8° 59.80' N	110° 21.03' W			3664	CTD IN THE WATER	KA1 0051
066	2124	+7	8° 59.98' N	110° 21.15' W			3696	CTD AT DEPTH (206 m)	↓
066	2145	+7	8° 59.99' N	110° 21.17' W			3624	CTD AT THE SURFACE	↓
067	2355	+7	8° 39.24' N	110° 16.36' W	159 16	10.7	3688	WX BALLOON LAUNCHED *127551911	
067	0350	+7	8° 02.46' N	110° 08.75' W	V/C	V/S	4093	BOOY FLY-BY AT 8° N	
067	0426	+7	8° 02.43' N	110° 08.78' W	V/C	V/S	4130	CTD IN THE WATER KA 10051	
067	0536	+7	8° 03.29' N	110° 09.09' W	V/C	V/S	4080	CTD AT DEPTH (3835 m)	
067	0655	+7	8° 03.72' N	110° 08.82' W	V/C	V/S	3728	CTD AT SURFACE	
067	0555	+7	8° 03.43' N	110° 09.06' W	V/C	V/S	4076	BALLOON LAUNCH #127551913	
067	1231	+7	7° 20.73' N	110° 04.11' W	172	8.5	—	BALLOON LAUNCH # 204404514	
067	1526	+7	7° 00.49' N	110° 02.01' W	V/C	V/S	3733	CTD IN WATER	KA1 0061
067	1530	+7	7° 00.79' N	110° 01.99' W	V/C	V/S	3697	CTD AT DEPTH (1080 m wire out)	↓
067	1621	+7	7° 01.31' N	110° 02.12' W	V/C	V/S	3746	CTD AT SURFACE	↓
067	1755	+7	6° 45.40' N	110° 00.66' W	175	11.5	—	BALLOON LAUNCH # 204404004	KA1 0071
067	2155	+7	5° 59.92' N	109° 57.06' W	V/C	V/S	—	CTD IN WATER	↓
067	2223	+7	5° 59.91' N	109° 56.89' W	↓	↓	3596	CTD AT DEPTH (1005 m)	↓
067	2254	+7	5° 59.67' N	109° 56.76' W	↓	↓	—	CTD AT THE SURFACE	↓
067	2356	+7	5° 54.22' N	109° 56.45' W	184	5.8	—	BALLOON LAUNCH # 201501411	
068	0558	+7	05° 14.51' N	109° 52.81' W	175	6.7	—	BALLOON LAUNCH # 204403903	

MARINE OBSERVATION AND STATION ABSTRACT

NOAA SHIP KA'IMIMOANA

SHEET # 5 OF

CRUISE #: KA-02-01

TAO MOORING LINES: 95/110

CHIEF SCIENTIST: McPhaden / Moore

MONTH/YEAR: MAR 02

TIME OF OPERATION			GPS POSITION		COURSE (°T)	SPEED (KTS)	DEPTH (M)	DESCRIPTION OF OPERATION	EVENT #
JULIAN DATE	GMT TIME HH:MM	TIME ZONE	LATITUDE DEG° MM.SS	LONGITUDE DEG° MM.SS					
068	1002	+7	4° 59.52' N	109° 51.74' W	v/c	2/s	-	CTD IN WATER	KAI 0081
068	1111	+7	5° 00.22' N	109° 51.68' W	v/c	v/s	3797	CTD AT DEPTH (3577m)	
068	1154	+7	5° 00.58' N	109° 51.51' W	v/c	v/s	-	LAUNCHED BALLOON #201501304	—
068	1226	+7	5° 00.96' N	109° 51.26' W	v/c	v/s	-	CTD AT THE SURFACE	↓
068	1449	+7	4 55.98' N	109 50.78' W	v/c	v/s	-	ANCHOR RELEASE CONFIRMED	
068	1536	+7	4° 56.29' N	109° 50.83' W	"	"	3692	BUOY ON DECK	
068	1642	+7	4° 56.05' N	109° 50.45' W	"	"	-	WILSPIN RECOVERED	
068	1748	+7	4° 56.11' N	109° 52.48' W	"	"	-	LAUNCHED BALLOON #204404012	
068	1818	+7	4° 56.95' N	109° 53.86' W	"	"	3841	BUOY RECOVERY COMPLETE	
068	1940	+7	5° 03.7' N	109° 58.0' W	"	"	3906	BUOY IN THE WATER	
068	2020	+7	5° 03.2' N	109° 58.5' W	"	"	3884	WILSPIN IN THE WATER	
068	2214	+7	5° 00.16' N	109° 59.37' W	"	"	3872	ANCHORS AWAY	
068	2356	+7	5° 04' 59.9' N	109° 58.2' W	-	-	-	LAUNCHED BALLOON # 204302000	
069	0523	+7	04 00 02	110 01 58	v/c	v/s	-	CTD IN WATER	KAI 0091
069	0546	+7	04° 00.26' N	110° 01.69' W	v/c	v/s	2685	CTD AT DEPTH (1000m)	KAI 0091
069	0614	+7	04° 00.48' N	110° 01.66' W	v/c	v/s	?	CTD AT SURFACE	↓
069	0557	+7	04° 00.36' N	110° 01.68' W	v/c	v/s	?	Balloon launch # 201501410	
069	1200	+7	03° 00.07' N	110° 03.97' W	v/c	v/s	-	CTD IN THE WATER	KAI 0101
069	1211	+7	03° 00.16' N	110° 03.96' W	v/c	v/s	-	LAUNCHED WX BALLOON #201501415	—
069	1223	+7	03° 00.25' N	110° 03.93' W	v/c	v/s	NO reading	CTD AT DEPTH (997m)	

MARINE OBSERVATION AND STATION ABSTRACT

NOAA SHIP KA'IMIMOANA

SHEET # 6 OF

CRUISE #: KA-02-01

TAO MOORING LINES: 9S/110 W

CHIEF SCIENTIST: McPhaden/Moore

MONTH/YEAR: March 2002

TIME OF OPERATION			GPS POSITION		COURSE (°T)	SPEED (KTS)	DEPTH (M)	DESCRIPTION OF OPERATION	EVENT #
JULIAN DATE	GMT TIME HH:MM	TIME ZONE	LATITUDE DEG° MM.SS	LONGITUDE DEG° MM.SS					
069	1253	+7	03° 00.51' N	110° 110° 03.85' W	v/c	v/s	—	CTD AT THE SURFACE	KAI 0101
069	1556	+7	02° 30.20' N	110° 04.75' W	v/c	v/s	3645	CTD IN WATER 3645 SUR	KAI 0111
069	1619	+7	02° 30.54' N	110° 04.91' W	v/c	v/s	3640	CTD AT DEPTH (996 m)	
069	1648	+7	02° 30.57' N	110° 04.83' W	v/c	v/s	3642	CTD AT SURFACE	
069	1755	+7	02° 20.34' N	110° 05.34' W	173	11.1	3699	BALLOON LAUNCH # 201501300	
* 069	2119	+7	02° 02.43' N	110° 06.05' W	v/c	v/s	3900	CTD IN WATER	KAI 0121
069	2140	+7	02° 02.53' N	110° 06.08' W	v/c	v/s	3907	CTD AT DEPTH (994 m)	↓
069	2210	+7	02° 02.59' N	110° 06.34' W	v/c	v/s	3936	CTD AT SURFACE	↓
069	20							BALLOON LAUNCH # 201501407	
069	2352	+7	01° 45.08' N	110° 11.30' W	v/c	v/s	3769	BALLOON LAUNCH # 201501407	
070	0118	+7	01° 29.99' N	110° 15.25' W	v/c	v/s	—	CTD IN THE WATER	KAI 0131
070	0141	+7	01° 30.07' N	110° 15.66' W	↓	↓	3727	CTD AT DEPTH (999 m)	↓
070	0212	+7	01° 30.20' N	110° 15.58' W	↓	↓	—	CTD AT THE SURFACE	↓
070	0508	+7	01° 00.21' N	110° 24.56' W	v/c	v/s	3815	CTD IN THE WATER	KAI
070	0530	+7	01° 00.21' N	110° 22.63' W	v/c	v/s	3811	CTD AT DEPTH (995 m)	KAI 0141
070	0558	+7	01° 00.17' N	110° 24.70' W	v/c	v/s	—	BALLOON LAUNCH # 206310806	↓
070	0558	+7	01° 00.17' N	110° 24.70' W	v/c	v/s	3865	CTD AT SURFACE	↓
070	1110	+7	0° 30.02' N	110° 33.20' W	v/c	v/s	—	CTD IN THE WATER	KAI 0151
070	1134	+7	0° 30.10' N	110° 33.17' W	v/c	v/s	3839	CTD AT DEPTH (997 m)	↓
070	1202	+7	0° 30.19' N	110° 33.16' W	v/c	v/s	—	CTD AT THE SURFACE	↓

* AT 069 2030 THE SIMRAD ES-60 WAS CHANGED FROM 1470 m/s TO 1500 m/s

MARINE OBSERVATION AND STATION ABSTRACT

NOAA SHIP KA'IMIMOANA

SHEET # 7 OF

CRUISE #: KA-02-01

TAO MOORING LINES: 95/110

CHIEF SCIENTIST: McPhaden / Moore

MONTH/YEAR: March 02

TIME OF OPERATION			GPS POSITION		COURSE (°T)	SPEED (KTS)	DEPTH (M)	DESCRIPTION OF OPERATION	EVENT #
JULIAN DATE	GMT TIME HH:MM	TIME ZONE	LATITUDE DEG° MM.SS	LONGITUDE DEG° MM.SS					
070	1235	+7	0° 27.63' N	110° 35.32' W	V/C	V/S	—	LAUNCHED BALLOON #201509903	
070	1305	+7	0° 26.60' N	110° 34.49' W	V/C	V/S	—	ANCHOR RELEASED	
070	1344	+7	0° 26.77' N	110° 34.98' W	V/C	V/S	—	BUOY ON DECK	
070	1605	+7	0° 26.18' N	110° 34.06' W	"	"	3875	NETSPIN RECOVERED	
070	1740	+7	0° 22.91' N	110° 33.18' W	"	"		BUOY RECOVERY COMPLETE	
070	1754	+7	0° 21.88	110° 31.67' W	120	11.2	←	BALLOON LAUNCH #204404502	
070	2129	+7	0° 00.24' N	110° 03.19' W	V/C	V/S	3763	CONFIRMED RELEASE	
070	2159	+7	0° 00.77' N	110° 03.03' W	V/C	V/S	3772	ADCP ON DECK	
070	2340	+7	0° 00.35' N	110° 05.60	"	"	3784	ADCP RELEASE ON DECK	
071	0002	+7	0° 00.46' N	110° 03.72' W	"	"	3770	LAUNCHED BALLOON #204403904	
071		+7			V/C	V/S		ADCP IN WATER	
070	0138	+7	0° 00.30' N	109° 58.37' W	V/C	V/S		ADCP ON DECK	
070	0315	+7	0° 00.25' S	109° 57.69' W	V/C	V/S	3824	CTD IN WATER	↓
071	0421	+7	0° 00.30' S	109° 57.50' W	V/C	V/S	3826	CTD AT DEPTH (3557 m)	KA1 #0161 ↑
071	0531	+7	0° 00.46' S	109° 57.18' W	V/C	V/S	3830	CTD AT SURFACE	
071	0557	+7	0° 00.46' S	109° 57.03' W	V/C	V/S	—	BALLOON LAUNCH #201501404	
071	1209	+7	0° 00.78' N	109° 58.24' W	V/C	V/S	—	LAUNCHED BALLOON #201501403	
071	1512	+7	0° 01.00' N	109° 58.63' W	"	"	3832	ADCP IN THE WATER	
071	1708	+7	0° 00.49' N	110° 03.84' W	"	"	3772	RELEASE IN THE WATER	
071	1716	+7	0° 00.51' N	110° 04.19' W	"	"	3767	ADCP DEPLOYMENT COMPLETE	

MARINE OBSERVATION AND STATION ABSTRACT

NOAA SHIP KA'IMIMOANA

SHEET # 8 OF

CRUISE #: KA-~~02-01~~ 02-01

TAO MOORING LINES: 95/110

CHIEF SCIENTIST: McPhaden/Moore

MONTH/YEAR: March 02

TIME OF OPERATION			GPS POSITION			COURSE (°T)	SPEED (KTS)	DEPTH (M)	DESCRIPTION OF OPERATION	EVENT #
JULIAN DATE	GMT TIME HH:MM	TIME ZONE	LATITUDE DEG° MM.SS	LONGITUDE DEG° MM.SS						
071	1805	+7	00° 00.2 N	110° 03.8 W	V/C	VS	3870 [?]	LAUNCH BALLOON # 204403900		
071	2013	+7	00° 01.02-N	109° 51.47-W	V/C	VS	3754	BUOY IN THE WATER		
071	2159	+7	00° 00.07-N	109° 53.88-W	"	"	3754	NEUTRIN IN THE WATER		
71		+7			"	"		Anchor Away Release in the water		
71		+7			"	"		Anchor Away		
071	2357	+7	0° 00.60-N	109° 57.75-W	"	"		BALLOON LAUNCH # 204302104		
072	0005	+7	0° 00.51-N	109° 58.03-W	"	"	3821	Anchor Away		
072	0038	7	0° 00.38-N	109° 57.54-W	"	"	3832	BUOY FLY-BY POSITION		
072	0332	+7	00° 29' 63" S	109° 57.27' W	"	"	3951	CTD IN WATER (999 meters of wire)	KAI D171	
072	0355	+7	00° 29.91 S	109° 57.28' W	"	"	3948	CTD AT DEPTH (999 meters of wire)	↓	
072	0421	+7	00° 29.99 S	109° 57.27' W	"	"	3941	CTD AT SURFACE	↓	
072	0603	+7	00° 48.67' S	109° 57.95' W	178°	12.1	-	BALLOON LAUNCH # 204302112		
072	0708	+7	01° 00.09' S	109° 58.08' W			3945	CTD IN WATER	KAI 0181	
072	0731	+7	01° 00.01' S	109° 58.04' W			3943	CTD AT DEPTH (998 m)	↓	
072	0759	+7	0° 59.91' S	109° 58.00' W			3945	CTD AT SURFACE	↓	
072	1046	+7	0° 29.79' S	109° 58.43' W	V/C	V/S		CTD IN THE WATER	KAI 0191	
072	1107	+7	01° 29.83' S	109° 58.52' W	↓	↓	3879	CTD AT DEPTH (997m)	↓	
072	1137	+7	01° 29.95' S	109° 58.53' W	↓	↓	-	CTD AT THE SURFACE	↓	
072	1215	+7	01° 35.58' S	109° 58.52' W	180	12.0	3897	BALLOON # 204404000		

MARINE OBSERVATION AND STATION ABSTRACT

NOAA SHIP KA'IMIMOANA

SHEET # 9 OF

CRUISE #: ~~KA 0201~~ ^{STA 0201} 02-01

TAO MOORING LINES: 9S/110

CHIEF SCIENTIST: McPhaden/Moore

MONTH/YEAR: March 02

TIME OF OPERATION			GPS POSITION		COURSE (°T)	SPEED (KTS)	DEPTH (M)	DESCRIPTION OF OPERATION	EVENT #
JULIAN DATE	GMT TIME HH:MM	TIME ZONE	LATITUDE DEG° MM.SS	LONGITUDE DEG° MM.SS					
072	1415	+7	01°57.82'S	109°59.1'W	V/C	V/S		CTD IN THE WATER	KA1 0201
072	1439	+7	01°57.77'S	109°59.08'W	↓	↓	3927	CTD AT DEPTH (995m)	↓
072	1508	+7	01°57.69'S	109°59.04'W	↓	↓	3926	CTD AT THE SURFACE	↓
072	1805	+7	01°58.05'S	109°58.82'W	V/C	V/S	—	BALLOON LAUNCH #201501200	KA1 0211
072	2155	+7	02°29.89'S	109°59.42'W	V/C	V/S	3883	CTD IN THE WATER	↓
072	2218	+7	02°29.72'S	109°59.38'W	↓	↓	3885	CTD AT DEPTH (998m)	↓
072	2245	+7	02°29.62'S	109°59.25'W	↓	↓	—	CTD AT SURFACE	↓
073	0000	+7	02°42.03'S	109°59.68'W	178	11.0	3898	BALLOON LAUNCH #201501204	
073	0144	+7	02°59.87'S	109°59.53'W	V/C	V/S		CTD IN THE WATER	KA1 0221
073	0206	+7	02°59.65'S	109°59.58'W	↓	↓	3811	CTD AT DEPTH (998m)	↓
073	0237	+7	02°59.55'S	109°59.45'W	↓	↓	3826	CTD AT THE SURFACE	↓
073	0607	+7	03°36.07'S	109°58.72'W	178	11.0	—	BALLOON LAUNCH #201501315	KA+
073	0825	+7	04°00.03'S	109°57.59'W	V/C	V/S	3993	CTD IN THE WATER	KA1 0231
073	0848	+7	03°04.00.00'S	109°57.56'W	↓	↓	4005	CTD AT DEPTH (995m)	↓
073	0914	+7	03°59.98'S	109°57.49'W	↓	↓	4038	CTD AT SURFACE	↓
073	1208	+7	04°30.62'S	109°56.63'W	178	12.0	—	BALLOON LAUNCH #201501203	
073	1532	+7	5°00.31'S	109°54.17'W	"	"	3479	BUOY IN THE WATER	
073	1606	+7	4°59.95'S	109°55.02'W	"	"	3435	WILSPIN DEPLOYED	
073	1800	+7	4°59.28'S	110°00.03'W	"	"	3605	BUOY DEPLOYMENT COMPLETE	
073	1804	+7	4°59.27'S	110°00.19'W	"	"		BALLOON LAUNCH #204404008	

MARINE OBSERVATION AND STATION ABSTRACT

NOAA SHIP KA'IMIMOANA

SHEET # 10 OF

CRUISE #: KA-~~82-01~~⁰²⁻⁰¹ 02-01

TAO MOORING LINES: 95/110

CHIEF SCIENTIST: McPHADEN/MOORE

MONTH/YEAR: MARCH 2002

TIME OF OPERATION			GPS POSITION		COURSE (°T)	SPEED (KTS)	DEPTH (M)	DESCRIPTION OF OPERATION	EVENT #
JULIAN DATE	GMT TIME HH:MM	TIME ZONE	LATITUDE DEG° MM.SS	LONGITUDE DEG° MM.SS					
073	1819	+7	4°59.91'S	110°00.34'W	v/c	v/s	3564	CTD IN THE WATER	KA1 0241
073	1924	+7	4°59.67'S	110°00.45'W	v/c	v/s	3552	CTD AT DEPTH (3413 m WIRE OUT)	↓
073	2032	+7	4°59.32'S	110°00.68'W	v/c	v/s	3419	CTD AT SURFACE	↓
073	2054	+7	4°59.19'S	110°00.04'W	v/c	v/s	3630	BUOY FLY-BY POSITION	
073 074	0002	+7	5°20.13'S	110°29.48'W	233	12.5	—	BALLOON LAUNCH #204404314	
074	0602	+7	06°00.05'S	111°31.07'W	vc	vs	3704	BALLOON LAUNCH #204404310	
074	0602	+7	06°00.05'S	111°31.18	vc	vs	3704	CTD IN THE WATER.	KA1 0251
074	0624	+7	06°00.03'S	111°30.93	v/c	v/s	3702	CTD AT DEPTH (995 m)	↓
074	0853	+7	06°00.04'S	111°30.80	v/c	v/s	3622	CTD AT SURFACE	↓
074	1533	+7	6°18.26'S	112°03.51'W	"	"	4077	BUOY ON DECK	
074	1629	+7	6°18.58'S	112°03.66'W	"	"	4035	NETSPIN RECOVERED	
074	1749	+7	6°19.32'S	112°05.59'W	"	"	3820	BUOY RECOVERY COMPLETE	
074	2346	+7	6°59.74'S	111°14.63'W	v/c	v/s	3675	CTD IN THE WATER	KA1 0261
075	0007	+7	6°59.51'S	111°14.43'W	↓	↓	3714	CTD AT DEPTH (1013 m)	↓
075	0035	+7	6°59.58'S	111°14.15'W	↓	↓	—	CTD AT THE SURFACE	↓
075	0933	+7	8°00.25'S	110°00.54'W	v/c	v/s		CTD IN WATER	KA1 0271
075	1033	+7	8°00.26'S	110°00.20'W	↓	↓	3455	CTD AT DEPTH (3173 m)	↓
075	1149	+7	8°00.31'S	109°59.77'W	↓	↓		BALLOON LAUNCH #204404302	—
075	1147	+7	8°00.32'S	109°59.79'W	↓	↓		CTD AT THE SURFACE	↓
075	1450	+7	8°03.41'S	109°57.65'W	v/c	v/s	3192	CONFIRMED RELEASE BUOY ⁸	

MARINE OBSERVATION AND STATION ABSTRACT

NOAA SHIP KA'IMIMOANA

SHEET # 11 OF

CRUISE #: KA 02-014-010201

TAO MOORING LINES: 95/110

CHIEF SCIENTIST: MCPHADEN/MOORE

MONTH/YEAR: MARCH 2002

TIME OF OPERATION			GPS POSITION		COURSE (°T)	SPEED (KTS)	DEPTH (M)	DESCRIPTION OF OPERATION	EVENT #
JULIAN DATE	GMT TIME HH:MM	TIME ZONE	LATITUDE DEG° MM.SS	LONGITUDE DEG° MM.SS					
075	1534	+7	8°02.91'S	109°57.57'W	V/C/S	3392	BUOY ON DECK		
075	1625	+7	8°03.05'S	109°57.74'W	"	"	NILSPIN RECOVERED		
075	1742	+7	8°03.71'S	109°55.78'W	"	"	BUOY RECOVERY COMPLETE		
075	1801	+7	8°04.45'S	109°53.81'W	V/C	V/S	BALLOON LAUNCH (#2φ15φ1312)		
075	1852	+7	8°04.48'S	109°53.63'W	"	"	BUOY IN THE WATER		
075	1923	+7	8°04.33'S	109°54.25'W	"	"	NILSPIN IN THE WATER		
075	2052	+7	8°03.28'S	109°57.12'W	"	"	ANCHOR AWAY		
075	22:32	+7	8°03.48'S	109°57.04'W	"	"	BUOY FLY BY		
076	0000	+7	8°03.24'S	109°42.35'W			BALLOON LAUNCH #201501311		
076 ⁰⁷⁹	0630	+7	07°59.84'S	95°07.50'W	V/C	V/S	BALLOON LAUNCH #201501308		
076 ⁰⁷⁹	0646	+7	07°59.78'S	95°07.40'W			CTD IN WATER	KA1 0281	
079	0656	+7	07°59.72'S	95°07.32'W			CTD AT DEPTH (199 m)	↓	
079	0701	+7	07°59.67'S	95°07.30'W			CTD AT SURFACE	↓	
079	0710	+7	07°59.57'S	95°07.15'W			BUOY REPAIR COMPLETE		
079	0723	+7	07°59.55'S	95°06.84'W			CTD IN WATER	KA1 0282	
079	0732	+7	07°59.53'S	95°06.74'W			CTD AT DEPTH (199 m OUT)	KA1 0282	
079	0736	+7	07°59.45'S	95°06.69'W			CTD AT SURFACE	KA1 0282	
079	0743	+7	07°59.44'S	95°06.62'W			CTD ON DECK		
079	0757	+7	07°59.27'S	95°06.35'W			CTD IN WATER	KA1 0283	
079	0801	+7	07°59.51'S	95°06.26'W			CTD AT DEPTH (1000 m OUT)	↓	

MARINE OBSERVATION AND STATION ABSTRACT

NOAA SHIP KA'IMIMOANA

SHEET # 17 OF

CRUISE #: KA-01-02 02-01

CHIEF SCIENTIST: McPhaden, Moore

TAO MOORING LINES: 95/110 W

MONTH/YEAR: MAR 2002

TIME OF OPERATION			GPS POSITION		COURSE (°T)	SPEED (KTS)	DEPTH (M)	DESCRIPTION OF OPERATION	EVENT #
JULIAN DATE	GMT TIME HH:MM	TIME ZONE	LATITUDE DEG° MM.SS	LONGITUDE DEG° MM.SS					
079	0147	+7	07° 59.28' S	095° 06.06' W			3872	CTD AT SURFACE	KA1 0283
079	1240	+6	07° 12.97' S	095° 06.04' W	001 353	12	—	WX BALLOON LAUNCH #204302108	KA1 0291
079	1357	+6	06° 59.98' S	095° 05.88' W	V/C	V/S	3911	CTD IN WATER	KA1 0291
079	1419	+6	07° 00.02' S	095° 05.61' W	V/C	V/S	3916	CTD AT DEPTH (997M)	↓
079	1447	+6	07° 00.02' S	095° 05.47' W	V/C	V/S	3934	CTD AT SURFACE	↓
079	1801	+6	06° 22.76' S	095° 05.13' W			3943	WX BALLOON LAUNCH #201501303	
079	¹⁹⁵⁶ 1366	+6	05° 59.99' S	095° 05.06' W	V/C	V/S	3899	CTD IN WATER	KA1 0301
079	2019	+6	05° 59.85' S	095° 05.13' W	V/C	V/S	3902	CTD AT DEPTH (996m OUT)	↓
079	2047	+6	05° 59.80' S	095° 05.09' W			3903	CTD AT SURFACE (↓
080	0002	+6	05° 21.20' S	095° 03.91' W	005	12.6	—	WX BALLOON #206311000 LAUNCHED	
080	0118	+6	05° 01.25' S	095° 04.55' W	V/C	V/S		BUOY REPAIR POSITION	
080	0201	+6	05° 01.33' S	095° 04.89' W	V/C	V/S	3883	CTD IN WATER	
080	0211	+6	05° 01.31' S	095° 04.99' W	↓	↓	3830	CTD AT DEPTH (97M)	KA1 0311
080	0216	+6	05° 01.33' S	095° 04.94' W	↓	↓	3833	CTD AT SURFACE	
080	0231	+6	05° 01.59' S	095° 04.28' W	383 V/S	V/S	3843	CTD IN WATER	
080	0245	+6	05° 01.53' S	095° 04.34' W	↓	↓	3830	CTD AT DEPTH (199 m)	KA1 0312
080	0252	+6	05° 01.49' S	095° 04.39' W	↓	↓	3836	CTD AT SURFACE	
080	0312	+6	05° 00.64' S	095° 04.56' W	V/C	V/S	3809	CTD IN WATER	
080	0335	+6	05° 00.49' S	095° 04.64' W	↓	↓	3811	CTD AT DEPTH (994 M)	KA1 0313
080	0404	+6	05° 00.47' S	095° 04.66' W	↓	↓	3810	CTD AT SURFACE	KA1 0321

MARINE OBSERVATION AND STATION ABSTRACT

NOAA SHIP KA'IMIMOANA

SHEET # 13 OF

CRUISE #: KA-02-01

TAO MOORING LINES: 95/110

CHIEF SCIENTIST: McPhaden / Moore

MONTH/YEAR: MAR 2002

TIME OF OPERATION			GPS POSITION		COURSE (°T)	SPEED (KTS)	DEPTH (M)	DESCRIPTION OF OPERATION	EVENT #
JULIAN DATE	GMT TIME HH:MM	TIME ZONE	LATITUDE DEG° MM.SS	LONGITUDE DEG° MM.SS					
080	0600	+6	4° 38.33 S	095° 05.25 W	000	12.2	3720	WX BALLOON LAUNCH # 206311004	
080	0611	+6	3° 59.93 S	095° 07.06 W	v/c	v/s	3614	CTD IN WATER	KA1 0321
080	0934	+6	3° 59.86 S	095° 06.85 W	v/c	v/s	3605	CTD AT DEPTH (999m)	↓
080	1005	+6	3° 59.84 S	095° 06.44 W	v/c	v/s	—	CTD AT THE SURFACE	
080	1201	+6	3° 58.13 S	095° 08.15 W	³⁵⁴ 095	12.3	—	WX BALLOON # 206311002 LAUNCHED	
080	1512	+6	02° 59.87 S	095° 09.99 W	v/c	v/s	3567	CTD IN THE WATER	KA1 0332
080	1534	+6	02° 59.73 S	095° 09.83 W	v/c	v/s	3571	CTD AT DEPTH (1018 M)	↓
080	1604	+6	02° 59.62 S	095° 09.71 W	v/c	v/s	3571	CTD AT SURFACE	↓
080	1801	+6	02° 36.02 S	095° 11.30 W				WX BALLOON LAUNCH # 206311008	
080	1835	+6	02° 29.98 S	095 11.64 W			3501	CTD IN WATER	KA1 0341
080	1858	+6	02° 29.84 S	095° 11.64 W			3503	CTD AT DEPTH (1026 m)	↓
080	1926	+6	02° 29.62 S	095° 11.63 W			3511	CTD AT SURFACE	↓
080	2155	+6	01° 57.17 S	095° 13.89 W			23382	BUOY REPAIR POSITION	
080	2210	+6	01° 57.60 S	095° 13.60 W	v/c	v/s		CTD IN THE WATER	KA1 0351
080	2219	+6	01° 57.50 S	095° 13.45 W	↓	↓	3378	CTD AT DEPTH (202 m)	↓
080	2225	+6	01° 57.48 S	095° 13.40 W	↓	↓		CTD AT THE SURFACE	↓
080	2245	+6	01° 57.22 S	095° 14.34 W	v/c	v/s		CTD IN THE WATER (202 m)	KA1 0352
080	2253	+6	01° 57.07 S	095° 14.28 W	↓	↓	3418	CTD AT DEPTH (202 m)	↓
080	2259	+6	01° 57.00 S	095° 14.28 W	↓	↓		CTD AT THE SURFACE	↓
080	2334	+6	01° 56.44 S	095° 13.97 W	v/c	v/s		CTD IN THE WATER	KA1 0353

MARINE OBSERVATION AND STATION ABSTRACT

NOAA SHIP KA'IMIMOANA

SHEET # 14 OF

CRUISE #: KA-02-01

TAO MOORING LINES: 95/110

CHIEF SCIENTIST: McPhaden / Moore

MONTH/YEAR: MAR 2002

TIME OF OPERATION			GPS POSITION		COURSE (°T)	SPEED (KTS)	DEPTH (M)	DESCRIPTION OF OPERATION	EVENT #
JULIAN DATE	GMT TIME HH:MM	TIME ZONE	LATITUDE DEG° MM.SS	LONGITUDE DEG° MM.SS					
080	2353	+6	01° 56.44 S	095° 13.41' W	V/L	V/S	3400	CTD AT DEPTH (998m)	KAI 0353
080	2356	+6	01° 56.42 S	095° 13.93' W	V/L	V/S		WX BALLOON # 206311007 LAUNCHED	—
081	0023	+6	01° 56.34 S	095° 14.00' W	V/L	V/S		CTD AT THE SURFACE	↓
081	0249	+6	01° 29.80 S	095° 07.19 W	V/L	V/S		CTD IN THE WATER.	KAI 0361
081	0311	+6	01° 29.24	095° 07.38'	V/L	V/S	3324	CTD AT DEPTH (1019 M)	↓
081	0340	+6	01° 28.68	095° 07.62	V/L	V/S		CTD AT SURFACE	↓
081	0609	+6	0° 59.94' S	95° 00.03 W				WX BALLOON # 206310814	
081	0619	+6	0° 59.79' S	95° 00.01 W				CTD IN THE WATER	
081	0640	+6	0° 59.66' S	95° 00.03 W			3350	CTD AT DEPTH (997 m OUT)	
081	0707	+6	0° 59.48' S	95° 00.00 W				CTD AT SURFACE	
085	1455	+6	0° 30.28' S	94° 59.95 W	V/L	V/S	3406	CTD IN WATER	KAI 0381
085	1518	+6	0° 30.24' S	94° 59.88 W	↓	↓	3406	CTD AT DEPTH (995 M OUT)	
085	1545	+6	0° 30.18 S	94° 59.64 W	↓	↓		CTD AT SURFACE	
085	1759	+6	0° 04.40 S	95° 04.15 W				WX BALLOON # 206311006	
085	1859	+6	0° 00.40 S	95° 04.96 W				CTD AT THE SURFACE CTD IN WATER	KAI 0391
085	1908	+6	0° 00.39 S	95° 04.92 W			3240	CTD IN WATER AT DEPTH (197 m)	↓
085	1914	+6	0° 00.36 S	95° 04.88 W			3237	CTD AT SURFACE	↓
085	1935	+6	0° 00.31 S	95° 05.70 W			3269	CTD IN WATER	KAI 0392
085	1934	+6	0° 00.26	95° 05.62 W				CTD AT DEPTH (199 m)	↓
085	1950	+6	0° 00.26	95° 05.66 W				CTD AT SURFACE	↓

MARINE OBSERVATION AND STATION ABSTRACT

NOAA SHIP KA'IMIMOANA

SHEET # 15 OF

CRUISE #: KA-02-01

TAO MOORING LINES: 95/110

CHIEF SCIENTIST: Moore

MONTH/YEAR: March 2002

TIME OF OPERATION			GPS POSITION		COURSE (°T)	SPEED (KTS)	DEPTH (M)	DESCRIPTION OF OPERATION	EVENT #
JULIAN DATE	GMT TIME HH:MM	TIME ZONE	LATITUDE DEG° MM.SS	LONGITUDE DEG° MM.SS					
085	1945 1345	+6	00° 00.05 S	95° 05.21 W				PICKLEFORK DIVE OPS COMPLETE	
085	2012	+6	00° 00.72 S	95° 05.34 W			3212	CTD IN WATER	KA1 0393
085	2032	+6	0° 00.78 N	95° 05.25 W				CTD AT DEPTH (995 m OUT)	↓
085	2100	+6	0° 00.87 N	95° 05.06 W				CTD AT SURFACE	↓
085	2339	+6	0° 29.94 N	95° 09.08 W	v/c	v/s		CTD IN THE WATER	KA1 0401
086	0000	+6	0° 30.14 N	95° 09.08 W	v/c	v/s	3294	CTD AT DEPTH (999m)	↓
086	0029	+6	0° 30.34 N	95° 09.02 W	v/c	v/s		CTD AT THE SURFACE	↓
086	0004	+6	0° 30.17 N	95° 09.07 W	v/c	v/s	—	WX BALLOON #206311001 LAUNCHED	
086	0310	+6	0° 59.90' N	95° 13.20' W	v/c	v/s	—	CTD IN WATER	KA1 0411
086	0338	+6	1° 00.30' N	95° 14.04' W	↓	↓	3351	CTD AT DEPTH (1093m)	↓
086	0408	+6	1° 00.33' N	95° 14.97' W	↓	↓		CTD AT SURFACE	↓
086	0600	+6	1° 17.83' N	95° 15.77' W				WX BALLOON #206311005 LAUNCHED	
086	0946	+6	1° 59.74' N	95° 21.40' W	v/c	v/s		CTD IN THE WATER	KA1 0421
086	0955	+6	1° 59.86' N	95° 21.62' W	↓	↓	2996	CTD AT DEPTH (200m)	↓
086	1003	+6	1° 59.92' N	95° 21.70' W	↓	↓		CTD AT THE SURFACE	↓
086	1020	+6	2° 00.73' N	95° 21.92' W	v/c	v/s		CTD IN THE WATER	KA1 0422
086	1110	+6	2° 00.77' N	95° 21.95' W	↓	↓	2935	CTD AT DEPTH (2677m)	
086	1206	+6	2° 00.96' N	95° 21.79' W	↓	↓		CTD AT THE SURFACE	
086	1206	+6	2° 00.96' N	95° 21.79' W	v/c	v/s		WX BALLOON #206311003 LAUNCHED	
086	1343	+6	2° 00.73' N	95° 20.81' W	v/c	v/s		ANCHOR RELEASE	

MARINE OBSERVATION AND STATION ABSTRACT

NOAA SHIP KA'IMIMOANA

SHEET # 16 OF

CRUISE #: KA-02-01

TAO MOORING LINES: 95/110

CHIEF SCIENTIST: BEN MOORE

MONTH/YEAR: MARCH 2002

TIME OF OPERATION			GPS POSITION		COURSE (°T)	SPEED (KTS)	DEPTH (M)	DESCRIPTION OF OPERATION	EVENT #
JULIAN DATE	GMT TIME HH:MM	TIME ZONE	LATITUDE DEG° MM.SS	LONGITUDE DEG° MM.SS					
086	1442	+6	2°01.48'N	95°21.38'W	V/C/S	2873	BUOY ON DECK		
086	1610	+6	2°01.91'N	95°22.23'W	"	"	2843 NILSPIN RECOVERY COMPLETE		
086	1718	+6	2°01.11'N	95°22.09'W	"	"	2887 BUOY RECOVERY COMPLETE		
086	1803	+6	1°57.88'N	95°16.51'W	"	"	2852 BALLOON LAUNCH #201501307		
086	2025	+6	1°57.28'N	95°15.46'W	"	"	2856 BUOY IN THE WATER		
086	2146	+6	1°58.64'N	95°18.71'W	"	"	2933 NILSPIN IN THE WATER		
086	2239	+6	1°59.50'N	95°21.04'W	"	"	ANCHOR RELEASE IN WATER		
087	0001	+6	1°59.38'N	95°19.37'W	"	"	WX BALLOON-LAUNCHED #204404306		
087	0015	+6	1°59.38'N	95°18.83'W	"	"	3132 ANCHOR AWAY-DEPLOYMENT-OVER		
087	01:13	+6	1°59.65'N	95°19.39'W	"	"	3098 BUOY FLY-BY		
087	0125	+6	1°59.76'N	95°18.81'W	V/C	V/S	CTD IN THE WATER		
087	0137	+6	1°59.82'N	95°18.79'W	↓	↓	3125 CTD AT DEPTH (499 m)	↓	
087	0148	+6	1°59.88'N	95°18.80'W	↓	↓	CTD AT THE SURFACE	↓	
087	0432	+6	2°30.12'N	95°14.03'W	V/C	V/S	CTD IN WATER		
087	0459	+6	2°30.58'N	95°14.57'W	↓	↓	2434 CTD AT DEPTH (1077 m)		
087	0527	+6	2°31.01'N	95°14.51'W	↓	↓	CTD AT SURFACE		
087	0619	+6	2°39.28'N	95°11.92'W			WX BALLOON LAUNCH #204404510		
087	0816	+6	3°00.41'N	95°06.72'W			CTD IN WATER	KA1 0441	
087	0841	+6	3°00.51'N	95°06.81'W			CTD AT DEPTH (1123 m)	↓	
88087	0910	+6	3°00.62'N	95°07.02'W			CTD AT SURFACE	↓	

MARINE OBSERVATION AND STATION ABSTRACT

NOAA SHIP KA'IMIMOANA

SHEET # 17 OF

CRUISE #: KA-02-01

TAO MOORING LINES: 99/110

CHIEF SCIENTIST: Moore

MONTH/YEAR: March 2002

TIME OF OPERATION			GPS POSITION		COURSE (°T)	SPEED (KTS)	DEPTH (M)	DESCRIPTION OF OPERATION	EVENT #
JULIAN DATE	GMT TIME HH:MM	TIME ZONE	LATITUDE DEG° MM.SS	LONGITUDE DEG° MM.SS					
087	1206	+6	3° 31.15' N	94° 57.4	015	11.5		WX BALLOON #204404203 LAUNCHED	
087	1320	+6	3° 37.10' N	94° 55.93' W	v/c	v/s		CTD IN THE WATER	KA1 0451
087	1330	+6	3° 37.16' N	94° 55.94' W	↓	↓	3394	CTD AT THE SURFACE ^{DEPTH} (199m)	↓
087	1335	+6	3° 37.21' N	94° 55.93' W	↓	↓		CTD AT THE SURFACE	↓
087	1354	+6	3° 38.00' N	94° 54.92' W	v/c	v/s		CTD IN WATER	KA1 0452
087	1403	+6	3° 37.99' N	94° 54.95' W	↓	↓	342	CTD AT DEPTH (198M)	↓
087	1410	+6	3° 38.00' N	94° 54.94' W	↓	↓		CTD AT SURFACE	↓
087	1418	+6	3° 37.89' N	94° 55.51' W	v/c	v/s		ANCHOR RELEASE CONFIRMATION	
087	1457	+6	3° 38.22' N	94° 56.05' W	"	"	3241	BUOY ON DECK	
087	1624	+6	3° 38.09' N	94° 56.18' W	"	"		NILSPIN RECOVERY COMPLETE	
087	1735	+6	3° 37.81' N	94° 55.78' W	"	"		BUOY RECOVERY COMPLETE	
087	1800	+6	3° 38.12' N	94° 52.87' W			3329	WX BALLOON #1028301802	
087	1903	+6	3° 38.18' N	94° 50.72' W	"	"	3271	BUOY IN THE WATER	
087	2034	+6	3° 37.77' N	94° 53.011' W	"	"	3330	NILSPIN IN THE WATER	
087	2135	+6	03° 37.70' N	94° 55.19' W	"	"	" "	Release in water	
087	2209	+6	03° 37.14' N	94° 56.24' W	"	"	3396	Anchor Aweigh	
087	2247	+6	03° 37.34' N	94° 56.01' W	"	"	3394	BUOY FLYBY	
087	2304	+6	03° 37.50' N	94° 55.76' W	v/c	v/s		CTD IN THE WATER (997m)	KA1 0453
087	2327	+6	03° 37.52' N	94° 55.68' W	↓	↓	3393	CTD AT DEPTH (997m)	↓
087	2354	+6	03° 37.57' N	94° 55.57' W	↓	↓		CTD AT THE SURFACE	↓

MARINE OBSERVATION AND STATION ABSTRACT

NOAA SHIP KA'IMIMOANA

SHEET # 18 OF

CRUISE #: KA-02-01

TAO MOORING LINES: 9S/110

CHIEF SCIENTIST: Moore

MONTH/YEAR: March 2002

TIME OF OPERATION			GPS POSITION		COURSE (°T)	SPEED (KTS)	DEPTH (M)	DESCRIPTION OF OPERATION	EVENT #
JULIAN DATE	GMT TIME HH:MM	TIME ZONE	LATITUDE DEG° MM.SS	LONGITUDE DEG° MM.SS					
087	2359	+6	03° 37.60 N	94° 55.54 W	v/c	v/s	—	WX BALLOON # 02840570S	
088	0210	+6	03° 59.84 N	94° 56.58 W	v/c	v/s		CTD IN THE WATER.	KA1 0461
088	0233	+6	03° 59.86' N	94° 56.66' W	v/c	v/s	3234	CTD AT DEPTH (994 m)	↓
088	0300	+6	03 59.92 N	94 56.70 W	v/c	v/s		CTD AT SURFACE	↓
088	0606	+6	03° 04' 27.74 N	94° 57.78' W				WA BALLOON # 028406202	
088	0950	+6	5° 03.42' N	95° 00.05' W	v/c	v/s		CTD IN THE WATER	KA1 0471
088	1000	+6	5° 03.57' N	95° 00.10' W	↓	↓	3581	CTD AT DEPTH (..... m)	↓
088	1005	+6	5° 03.64' N	95° 00.00' W	↓	↓		CTD AT THE SURFACE	↓
088	1023	+6	5° 04.48' N	95° 00.10' W	v/c	v/s		CTD IN THE WATER	KA1 0472
088	1032	+6	5° 04.45' N	95° 00.16' W	↓	↓	3584	CTD AT DEPTH	↓
088	1039	+6	5° 04.56' N	95° 00.14' W	↓	↓		CTD AT THE SURFACE	↓
088	1110	+6	5° 03.62' N	95° 00.87' W	v/c	v/s		CTD IN THE WATER	KA1 0473
088	1157	+6	5° 04.16' N	95° 00.85' W	v/c	v/s		WX BALLOON # 028301801 LAUNCHED	
088	1211	+6	5° 04.14' N	95° 00.81' W	v/c	v/s	3594	CTD AT DEPTH (3270 m)	↓
088	1319	+6	5° 03.75' N	95° 00.74' W	v/c	v/s		CTD AT THE SURFACE	↓
088	1404	+6	5° 03.94' N	95° 00.36' W	v/c	v/s		BUOY REPAIR POSITION	
088	1800	+6	5° 38.99' N	94° 59.62' W				BALLOON RELEASED # 204302004	
088	2006	+6	5° 59.94' N	94° 59.50' W				CTD IN WATER	KA1 0481
088	2028	+6	5° 59.81 N	94° 59.50' W			3184	CTD AT DEPTH (1001 m OUT)	↓
088	2055	+6	5° 59.74 N	94° 59.50' W				CTD AT SURFACE	

MARINE OBSERVATION AND STATION ABSTRACT

NOAA SHIP KA'IMIMOANA

SHEET # 19 OF

CRUISE #: KA-02-01

TAO MOORING LINES: 95/110

CHIEF SCIENTIST: Moore

MONTH/YEAR: March 2002

TIME OF OPERATION			GPS POSITION		COURSE (°T)	SPEED (KTS)	DEPTH (M)	DESCRIPTION OF OPERATION	EVENT #
JULIAN DATE	GMT TIME HH:MM	TIME ZONE	LATITUDE DEG° MM.SS	LONGITUDE DEG° MM.SS					
088	2353	+6	6° 24.33 N	94° 59.16' W	000	11.5	-	WX BALLOON #201501614 LAUNCHED	
089	0305	+6	6° 59.88 N	94° 58.35 W	V/C	V/S	3693	CTD IN WATER	KAI 0501
089	0328	+6	6° 59.82 N	94° 58.21' W	↓	↓	3690	CTD AT DEPTH (996 M)	↓
089	0353	+6	6° 00.24 N	94° 58.28 W	↓	↓		CTD AT SURFACE	↓
089	0600	+6	7° 20.34 N	94° 58.48 W	359	610.6		BALLOON LAUNCH #028405903	
089	0955	+6	8° 02.70 N	94° 57.63 W	V/C	V/S		CTD IN THE WATER	KAI 0501
089	1004	+6	8° 02.83 N	94° 57.58 W	↓	↓	3667	CTD AT DEPTH (200m)	↓
089	1008	+6	8° 02.88 N	94° 57.57 W	↓	↓		CTD AT THE SURFACE	↓
089	1027	+6	8° 03.26 N	94° 58.11 W	V/C	V/S		CTD IN THE WATER	KAI 0502
089	1036	+6	8° 03.29 N	94° 58.06 W	↓	↓	3677	CTD AT DEPTH	↓
089	1041	+6	8° 03.32 N	94° 58.02 W	↓	↓		CTD AT THE SURFACE	↓
089	1100	+6	8° 03.40 N	94° 57.24 W	V/C	V/S		CTD IN THE WATER	KAI 0503
089	1204	+6	8° 03.44 N	94° 57.19 W	↓	↓	3666	CTD AT DEPTH (3366m)	↓
089	1223	+6	8° 03.38 N	94° 57.14 W	↓	↓		WX BALLOON #028405706 LAUNCHED	
089	1308	+6	8° 03.27 N	94° 57.07 W	↓	↓		CTD AT THE SURFACE	↓
089	1404	+6	8° 03.25 N	94° 57.67 W	V/C	V/S	3670	BUOY REPAIR POSITION	
089	1755	+6	8° 34.78 N	94° 56.21 W				WX BALLOON #028406402	
089	2039	+6	8° 59.75 N	94° 56.32 W				CTD IN WATER	KAI 0511
089	2059	+6	8° 59.84 N	94° 56.34 W			3531	CTD AT DEPTH (1009 m)	↓
089	2125	+6	8° 59.99 N	94° 56.26 W				CTD AT SURFACE	↓

MARINE OBSERVATION AND STATION ABSTRACT

NOAA SHIP KA'IMIMOANA

SHEET # 20 OF

CRUISE #: KA-02-01

TAO MOORING LINES: 9S/110

CHIEF SCIENTIST: Moore

MONTH/YEAR: March 2002

TIME OF OPERATION			GPS POSITION		COURSE (°T)	SPEED (KTS)	DEPTH (M)	DESCRIPTION OF OPERATION	EVENT #
JULIAN DATE	GMT TIME HH:MM	TIME ZONE	LATITUDE DEG° MM.SS	LONGITUDE DEG° MM.SS					
090	0005	+6	9° 24.90' N	94° 55.32' W	003	9.5	—	WX BALLOON # 204606100	
090	0402	+6	10° 01.23' N	94° 54.58' W	V/C	V/S		CTD IN WATER	KAI 0521
090	0412	+6	10° 01.26' N	94° 54.76' W	V/C	V/S	3865	CTD AT DEPTH (199M)	↓
090	0417	+6	10° 01.28' N	94° 54.86' W	V/C	V/S		CTD AT SURFACE	↓
090	0459	+6	10° 02.49' N	94° 52.64' W	V/C	V/S	3832	CTD IN WATER	KAI 0522
090	0553	+6	10° 02.66' N	94° 53.06' W	↓	↓		WX BALLOON # 028406408	↓
090	0607	+6	10° 02.69' N	94° 53.09' W	↓	↓	3801	CTD AT DEPTH (3570 m OUT)	↓
090	0716	+6	10° 02.84' N	94° 53.42' W				BALLOON CTD AT SURFACE	KAI 0522
090	1202	+6	10° 01.65' N	94° 54.43' W	V/C	V/S		WX BALLOON # 028301804 LAUNCHED	
090	1347	+6	10° 01.80' N	94° 54.30' W	V/C	V/S		ANCHOR RELEASED	
090	1429	+6	10° 02.31' N	94° 55.17' W	"	"	3852	Buoy ON DECK	
090	1539	+6	10° 02.39' N	94° 55.85' W	"	"	3878	MILSPIN RECOVERY COMPLETE	
090	1705	+6	10° 03.19' N	94° 57.13' W	"	"	3933	Buoy RECOVERY COMPLETE	
090	1804	+6	10° 01.94' N	94° 49.22' W				WX BALLOON # 028405704	
090	1926	+6	10° 00.91' N	94° 43.95' W	"	"	3845	Buoy IN THE WATER.	
090	2000	+6	10° 01.10' N	94° 45.33' W	"	"	3836	MILSPIN IN THE WATER	
090	2225	+6	10° 01.89' N	94° 53.98' W	"	"	3861	ANCHOR AWAY	
090	2315	+6	10° 01.90' N	94° 53.72' W	"	"	3844	Buoy FLY-BY POSITION	
090	2337	+6	10° 02.10' N	94° 53.72' W	V/C	V/S		CTD IN THE WATER	KAI 0523
090	2351	+6	10° 02.14' N	94° 53.83' W	↓	↓	3826	CTD AT DEPTH (499m)	↓

MARINE OBSERVATION AND STATION ABSTRACT

NOAA SHIP KA'IMIMOANA

SHEET # 21 OF

CRUISE #: KA-02-01

TAO MOORING LINES: 9S/110

CHIEF SCIENTIST: Moore

MONTH/YEAR: March 2002

April

TIME OF OPERATION			GPS POSITION		COURSE (°T)	SPEED (KTS)	DEPTH (M)	DESCRIPTION OF OPERATION	EVENT #
JULIAN DATE	GMT TIME HH:MM	TIME ZONE	LATITUDE DEG° MM.SS	LONGITUDE DEG° MM.SS					
091	0002	+6	10° 02.16 N	94° 53.85 W	V/C	V/S		CTD AT THE SURFACE	KA1 0523
091	0514	+6	10° 59.89 N	94° 54.00 W	V/C	V/S		CTD IN WATER	KA1 0541
091	0536	+6	10° 59.86 N	94° 54.12 W	V/C	V/S	3941	CTD AT DEPTH (995 m OUT)	KA1 0541
091	0604	+6	10° 59.87 N	94° 54.12 W				CTD AT SURFACE	KA1 0541
091	1150	+6	12° 04.35 N	94° 54.04 W	V/C	V/S		CTD IN THE WATER	KA1 0551
091	1158	+6	12° 04.32 N	94° 54.00 W	↓	↓	4115	CTD AT DEPTH (199 m)	↓
091	1203	+6	12° 04.33 N	94° 53.97 W	↓	↓		CTD AT THE SURFACE	↓
091	1222	+6	12° 04.96 N	94° 54.28 W	V/C	V/S		CTD IN THE WATER	KA1 0522
091	1243	+6	12° 05.00 N	94° 54.20 W	↓	↓	4108	CTD AT DEPTH (997 m)	↓
091	1313	+6	12° 05.03 N	94° 54.08 W	↓	↓		CTD AT THE SURFACE	↓
091	1346	+6	12° 04.74 N	94° 54.58 W	V/C	V/S		ANCHOR RELEASED	
091	1437	+6	12° 04.71 N	94° 53.63 W	"	"	4121	BUOY ON DECK	
091	1536	+6	12° 04.91 N	94° 52.94 W	"	"	4106	NILSPIN RECOVERY COMPLETE	
091	1709	+6	12° 06.21 N	94° 52.26 W	"	"	4094	BUOY RECOVERY COMPLETE	
091	1910	+6	12° 04.44 N	95° 02.50 W	"	"	4117	BUOY IN THE WATER	
091	1942	+6	12° 04.57 N	95° 01.32 W	"	"	4095	NILSPIN IN THE WATER	
091	2117	+6	12° 05.68 N	94° 56.90 W	"	"	4134 4116	ANCHOR AWAY	
091	2159	+6	12° 05.61 N	94° 57.28 W	V/C	V/S	4116	BUOY FLY-BY POSITION	
091	2215	+6	12° 05.82 N	94° 57.27 W	V/C	V/S		CTD IN THE WATER	KA1 0523
091	2229	+6	12° 05.78 N	94° 57.09 W			4130	CTD AT DEPTH (499 m)	

