

NET TOW SHEET

10/10/14
RWS

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)	
						BEGIN TOW	END TOW
CCE-P1408	MV	1	Towl	86	2014-08-11	10:26	10:45

TIME	Min.	Sec.	NET NO.	METER NO.	FINAL	INITIAL	DIFF.	MESH SIZE	PORT	STB.	TOW TYPE:	TOW NO.	OF
SINKING (descend)	5	16			26633	028894	995566				Oblique	1	1
TOWING (at depth)		30									SEA (Conditions):		
Total (ascend)	12	32						202um	202um		(Circle one)		
											Calm		
											Moderate		
											Rough		
											WIND:		
											knots		

AMT. OF WIRE OUT: 230 meters
 OBSERVERS: JAG, ML, DJ, BMO, Maya, Boli

ANGLES	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160
ANGLES								50	45	50	45	45	50	45	
WIRE OUT															
ANGLES	45	45	45	45	42	45	40	40	38	40	40		45	30	45
WIRE OUT	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10


No. OF JARS	PORT	STB.	NET CLOGGING	NET WASHING	RIPS AND HOLES IN NET
		1	none or slight	none	none
SIZE OF JAR (Circle One)	P	Q	✓		✓
FORMALIN & BORATE ADDED		✓			
ALCOHOL ADDED					
COLLECTORS INITS.		BML			

SOMETIMES THE SMALLEST THINGS TURN OUT TO BE THE MOST IMPORTANT. Sea Secrets: Tiny Clues to a Big Mystery

⊗ NOTE - Final + initial Revs recorded as 1/10ths of numbers here in the data spreadsheet (File CCE-LTER-P1408, MV-Bango-darr)

RWS Nov. 2014

all tows



<http://cce.lternet.edu/outreach/seasecrets/>

REMARKS:

NET TOW SHEET

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)											
						BEGIN TOW	END TOW										
CCE-P1408	MV	1	Tow 2	100	2014-08-11	21:57	22:06										
bottom depth: 347m																	
TIME	Min.	Sec.		PORT	STB.	TOW TYPE: <u>Oblique</u>											
SINKING (descend)	9	04	NET NO.			TOW NO. 1 OF 1											
TOWING (at depth)		32	METER NO.			SEA (Conditions): <u>Calm</u> (Circle one) Moderate Rough											
Total (ascend)	17	37	FINAL	266814		WIND: knots											
			INITIAL	028896													
			DIFF.														
			MESH SIZE	202um	202um												
AMT. OF WIRE OUT: 300 meters			OBSERVERS: MDO, DJ, JAB, JV, RS														
TOTAL NO. OF ANGLES:																	
ANGLES			53	52	53	53	55	54	57	51	57	52	55	50	54		
WIRE OUT	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160		
ANGLES			50	54	46	54	43	51	40	50	38	49	38	48	39	45	38
WIRE OUT	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10		
PORT		STB.															
No. OF JARS			1	NET CLOGGING		none or slight	moderate	heavy	very heavy								
SIZE OF JAR (Circle One)	P	Q	P	<u>Q</u>	NET WASHING		none	rinsed	washed								
FORMALIN & BORATE ADDED				✓	RIPS AND HOLES IN NET		none	location	when mended: (Circle one)	Before station							
ALCOHOL ADDED									After station								
COLLECTORS INITS.				RS													
REMARKS: winch wire slips - probably underestimated length by 30 m																	



NET TOW SHEET

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)									
						BEGIN TOW	END TOW								
CCE-P1408	MV	1	Tow J	115	2014-08-12	09:42	10:06								
bottom depth 495m															
TIME	Min.	Sec.		PORT	STB.	TOW TYPE: <i>Oblique</i>									
SINKING (descend)	7	05	NET NO.			TOW NO. 1 OF 1									
TOWING (at depth)	32		METER NO.			SEA (Conditions): <u>Calm</u> (Circle one) Moderate Rough									
Total (ascend)	16	21	FINAL	106379		WIND: knots									
			INITIAL	022472											
			DIFF.												
			MESH SIZE	202mm											
AMT. OF WIRE OUT: 500 meters			OBSERVERS: JAT, DJ, JMW, BV												
TOTAL NO. OF ANGLES:															
ANGLES	48	47	45	51	46	50	48	47	46	48	48	50	50	51	
WIRE OUT	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160
ANGLES	48	48	47	48	43	50	45	55	44	48	44	48	42	45	46
WIRE OUT	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10
PORT		STB.													
No. OF JARS			1			none or slight	moderate	heavy	very heavy						
SIZE OF JAR (Circle One)	P	Q	P	Q	NET CLOGGING										
FORMALIN & BORATE ADDED					NET WASHING	none	rinsed	washed							
ALCOHOL ADDED															
COLLECTORS INITS.					RIPS AND HOLES IN NET	none	location	when mended: (Circle one)	Before station	After station					
REMARKS: extra 25m & slipped wire/breechwheel wire															

NET TOW SHEET

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)	
						BEGIN TOW	END TOW
CCE-P1408	MV	1	4	125	2014-08-12	21:34	21:59

water depth: 556m

TIME	Min.	Sec.	NET NO.	METER NO.	PORT	STB.	TOW TYPE:
SINKING (descend)	7	36					Oblique
TOWING (at depth)		32	FINAL	INITIAL	144064	106384	SEA (Conditions) (Circle one)
Total (ascend)	17	11	DIFF.	MESH SIZE	702um	702um	Calm Moderate Rough
AMT. OF WIRE OUT: 300 meters			OBSERVERS: MDO, JAS, DJ, RS				
TOTAL NO. OF ANGLES:							

ANGLES	45	48	45	47	45	46	42	48	42	55	42	52	40	52	
WIRE OUT	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160
ANGLES	39	45	40	50	40	50	42	51	43	49	45	42	45	52	
WIRE OUT	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10

	PORT		STB.						
No. OF JARS					NET CLOGGING	none or slight	moderate	heavy	very heavy
SIZE OF JAR (Circle One)	P	Q	P	Q	NET WASHING	none	rinsed	washed	
FORMALIN & BORATE ADDED					RIPS AND HOLES IN NET	none	location	when mended: (Circle one)	Before station After station
ALCOHOL ADDED									
COLLECTORS INTS.									

REMARKS: wire off by 30 meters

NET TOW SHEET *11/2/14*
2105

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)	
						BEGIN TOW	END TOW
CCE-P1408	MV	1	5	141	2014-08-13	09:30	09:54

Water depth 469m

TIME	Min.	Sec.	NET NO.	METER NO.	PORT	STB.	TOW TYPE:	TOW NO.
SINKING (descend)	7	07					<i>Oblique</i>	1 OF 1
TOWING (at depth)		31	FINAL	INITIAL	186397	146062	SEA (Conditions):	
			DIFF.				(Circle one) <u>Calm</u>	
							Moderate	
							Rough	
Total (ascend)	16	34					WIND:	knots
			MESH SIZE		202µm	202µm		

AMT. OF WIRE OUT:	300 meters	OBSERVERS:	<i>BU, BMW, DJ, JAB</i>
TOTAL NO. OF ANGLES:			

ANGLES		49	48	46	50	48	53	46	50	47	52	48	55	48	55	
WIRE OUT	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160	
ANGLES		48	55	51	55	48	52	48	52	46	48	45	48	46	45	43
WIRE OUT	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10	

		PORT		STB.					
No. OF JARS						none or slight	moderate	heavy	very heavy
SIZE OF JAR (Circle One)	P	Q	P	Q		NET CLOGGING			
FORMALIN & BORATE ADDED						NET WASHING	none	rinsed	washed
ALCOHOL ADDED									
COLLECTORS INITS.						RIPS AND HOLES IN NET	none	location	when mended: (Circle one) Before station After station

REMARKS:
wire underestimated by

NET TOW SHEET

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)	
						BEGIN TOW	END TOW
CCE-P1408	MV	1	Tow 6	154	2014-08-13	22:26	22:52

water depth: 503m

TIME	Min.	Sec.	PORT	STB.	TOW TYPE:
SINKING (descend)	6	51	NET NO.		Oblique
TOWING (at depth)		30	METER NO.		TOW NO. 1 OF 1
Total (ascend)	16	17	FINAL	224645	SEA (Conditions) (Circle one) <u>Calm</u>
			INITIAL	186399	Moderate
			DIFF.		Rough
			MESH SIZE	202µm 202µm	WIND: knots

AMT. OF WIRE OUT:	300 meters	OBSERVERS:	MDO, RS, JAJ, DJ
TOTAL NO. OF ANGLES:			

ANGLES	50	44	45	48	45	45	48	47	53	45	55	45	55		
WIRE OUT	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160

ANGLES	45	52	49	50	45	48	38	46	41	45	44	45	52		
WIRE OUT	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10

		PORT		STB.					
No. OF JARS						none or slight	moderate	heavy	very heavy
SIZE OF JAR (Circle One)	P	Q	P	Q	NET CLOGGING				
FORMALIN & BORATE ADDED					NET WASHING	none	rinsed	washed	
ALCOHOL ADDED					RIPS AND HOLES IN NET	none	location	when mended: (Circle one)	Before station
COLLECTORS INITS.									After station

REMARKS: meter underestimated by 31m

NET TOW SHEET

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)									
						BEGIN TOW	END TOW								
CCE-P1408	MV	1	Tow 6		2014-08-13										
TIME	Min.	Sec.		PORT	STB.	TOW TYPE: <i>Oblique</i>									
SINKING (descend)			NET NO.			TOW NO. 1 OF 1									
			METER NO.			SEA (Conditions) <i>Calm</i> (Circle one) Moderate Rough									
TOWING (at depth)			FINAL												
			INITIAL												
Total (ascend)			DIFF.			WIND: knots									
			MESH SIZE	<i>202um</i>	<i>202um</i>										
AMT. OF WIRE OUT:			meters	OBSERVERS:											
TOTAL NO. OF ANGLES:				<i>JAS, RS,</i>											
ANGLES															
WIRE OUT	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160
ANGLES															
WIRE OUT	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10
PORT		STB.													
No. OF JARS			NET CLOGGING	none or slight	moderate	heavy	very heavy								
SIZE OF JAR (Circle One)	P	Q		P	Q										
FORMALIN & BORATE ADDED			NET WASHING	none	rinsed	washed									
ALCOHOL ADDED															
COLLECTORS INITS.			RIPS AND HOLES IN NET	none	location	when mended: (Circle one)	Before station After station								
REMARKS:															

NET TOW SHEET

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)	
						BEGIN TOW	END TOW
CCE-P1408	MV	2	1	214	2014-08-17	09:54	10:18

hd: 795m

TIME	Min.	Sec.	NET NO.	METER NO.	PORT	STB.	TOW TYPE:	TOW NO.	SEA (Conditions):	WIND:
SINKING (descend)	6	49					Obligate	1 OF 1	Calm	
TOWING (at depth)		30	FINAL	INITIAL					Moderate	
			273499	259417					Rough	
Total (ascend)	15	47	DIFF.	MESH SIZE					knots	nan
				300m	200m					

AMT. OF WIRE OUT:	300 meters	OBSERVERS:	BMW, RS, JAB, DJ, BV
TOTAL NO. OF ANGLES:			

ANGLES	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160
55 55 55 55 55 52 55 50 55 52 52 48 55 48 50															
ANGLES	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10
45 50 45 55 42 50 40 47 45 45 45 41 50 40 52															

		PORT	STB.					
No. OF JARS				NET CLOGGING	none or slight	moderate	heavy	very heavy
SIZE OF JAR (Circle One)	P	Q	P	Q				
FORMALIN & BORATE ADDED				NET WASHING	none	rinsed	washed	
ALCOHOL ADDED								
COLLECTORS INTS.				RIPS AND HOLES IN NET	none	location	when mended: (Circle one)	Before station After station

REMARKS: wire underestimated by 30
Copious Salps in port Cod end minimal salps in stern Cod End

MDE 10 Oct 2014

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NET TOW SHEET

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)									
						BEGIN TOW	END TOW								
CCE-P1408	MV	2	2	26	2014-08-17	21 ⁰ 45	22 ⁰ 09								
wd: 850 m															
TIME	Min.	Sec.		PORT	STB.	TOW TYPE: <u>Oblique</u>									
SINKING (descend)	6	28	NET NO.			TOW NO. 1 OF 1									
TOWING (at depth)		33	METER NO.	26633		SEA (Conditions): Calm (Circle one) <u>Moderate</u> Rough									
Total (ascend)	15	35	FINAL	306242		WIND: knots									
			INITIAL	273920											
			DIFF.												
			MESH SIZE	202um	202um										
AMT. OF WIRE OUT: 300 meters			OBSERVERS: RS, MDO, JAG, DJ												
TOTAL NO. OF ANGLES:															
ANGLES	45	58	45	55	45	55	45	45	48	49	52	49			
WIRE OUT	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160
ANGLES	50	48	44	50	50	42	48	42	45	42	38				
WIRE OUT	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10
PORT		STB.													
No. OF JARS					none or slight	moderate	heavy	very heavy							
SIZE OF JAR (Circle One)	P	Q	P	Q	NET CLOGGING										
FORMALIN & BORATE ADDED					NET WASHING	none	rinsed	washed							
ALCOHOL ADDED															
COLLECTORS INITS.					RIPS AND HOLES IN NET	none	location	when mended: (Circle one)	Before station	After station					
REMARKS:															

NET TOW SHEET

10/10/14
RWS

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)	
						BEGIN TOW	END TOW
CCE-P1408	MV	2	Tow 3	241	2014-08-18	09:33	09:59

bd: 940m

TIME	Min.	Sec.	NET NO.	METER NO.	PORT	STB.	TOW TYPE:
SINKING (descend)	7	07					Cal Bobl
TOWING (at depth)	30		FINAL 345993	INITIAL 306256			SEA (Conditions): (Circle one) Calm Moderate Rough
Total (ascend)	16	32	DIFF.	MESH SIZE 200		200	WIND: knots

AMT. OF WIRE OUT:	500 meters	OBSERVERS:	BMW, BV, DS, JAB
TOTAL NO. OF ANGLES:			

ANGLES	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160
	40	43	40	45	41	43	42	45	45	45	47	44	49	44	
ANGLES	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10
	50	45	51	48	47	48	47	47	48	46	47	41	46	58	48

51 52
-10 -20

PORT		STB.		NET CLOGGING	none or slight	moderate	heavy	very heavy
No. OF JARS								
SIZE OF JAR (Circle One)	P	Q	P	Q				
FORMALIN & BORATE ADDED					none	rinsed	washed	
ALCOHOL ADDED								
COLLECTORS INITS.					none	location	when mended: (Circle one)	Before station After station

REMARKS: wire underestimated by 30 m

NET TOW SHEET

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)											
						BEGIN TOW	END TOW										
CCE-P1408	MV	2	Tow 4		2014-08-18	21:34	21:57										
bd:																	
TIME	Min.	Sec.		PORT	STB.	TOW TYPE: <i>ocean</i>											
SINKING (descend)	7	43	NET NO.			TOW NO. 1 OF 1											
TOWING (at depth)		30	METER NO.			SEA (Conditions): <u>Calm</u> (Circle one) <u>Moderate</u> Rough											
Total (ascend)			FINAL	380454		WIND: knots											
			INITIAL	345990													
			DIFF.														
			MESH SIZE	202mm	202mm												
AMT. OF WIRE OUT: 300 meters			OBSERVERS:														
TOTAL NO. OF ANGLES:			JAB, DS, CR, RS, TB														
ANGLES			51	52	52	57	48	55	48	57	55	59	51	55	48	53	
WIRE OUT	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160		
ANGLES			45	55	42	55	41		42	53	45	52	40	57	30	28	20
WIRE OUT	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10		
PORT STB.																	
No. OF JARS																	
SIZE OF JAR (Circle One)	P	Q	P	Q	NET CLOGGING		none or slight	moderate	heavy	very heavy							
FORMALIN & BORATE ADDED					NET WASHING		none	rinsed	washed								
ALCOHOL ADDED					RIPS AND HOLES IN NET		none	location	when mended: (Circle one)	Before station	After station						
COLLECTORS INITS.																	
REMARKS: under by 20																	

times stopped

48
-10

NET TOW SHEET

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)									
						BEGIN TOW	END TOW								
CCE-P1408	MV	2	5	261	2014-08-19	09:25	09:49								
bd 31280m															
TIME	Min.	Sec.		PORT	STB.	TOW TYPE: Obligate									
SINKING (descend)	7	01	NET NO.			TOW NO. 1 OF 1									
TOWING (at depth)	32		METER NO.			SEA (Conditions): <u>Calm</u> (Circle one) Moderate Rough									
Total (ascend)	16	46	FINAL INITIAL	419428 380454		WIND: knots									
AMT. OF WIRE OUT: 300 meters			OBSERVERS:												
TOTAL NO. OF ANGLES:			BMW JFB, BMW JT												
ANGLES	53 52 51 52 53 52 51 55 48 55 48 53 42 52														
WIRE OUT	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160
ANGLES	43 52 42 48 44 45 45 42 45 42 45 38 40 45 47 43														
WIRE OUT	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10
PORT STB.															
No. OF JARS					NET CLOGGING	none or slight	moderate	heavy	very heavy						
SIZE OF JAR (Circle One)	P	Q	P	Q		NET WASHING	none	rinsed	washed						
FORMALIN & BORATE ADDED					RIPS AND HOLES IN NET	none	location	when mended: (Circle one)	Before station After station						
ALCOHOL ADDED															
COLLECTORS INITS.															
REMARKS:															

NET TOW SHEET

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)	
						BEGIN TOW	END TOW
CCE-P1408	MV	2	Tow 6	278	2014-08-19	21:39	22:04

bd : 1200m

TIME	Min.	Sec.	NET NO.	METER NO.	PORT	STB.	TOW TYPE: <i>oblique</i>
SINKING (descend)	6	45					TOW NO. 1 OF 1
TOWING (at depth)	30		FINAL 453646	INITIAL 419457			SEA (Conditions): <u>Calm</u> (Circle one) Moderate Rough
Total (ascend)			DIFF.	MESH SIZE			WIND: knots

23:10

AMT. OF WIRE OUT: 300 meters	OBSERVERS: JAS, JMW, HDO
TOTAL NO. OF ANGLES:	

ANGLES	48	52	40	51	38	49	37	50	32	55	54	35	53		
WIRE OUT	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160
ANGLES	38	52	42	52	45	51	46	48	48	49	52	50	50	48	
WIRE OUT	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10

48
10

	PORT		STB.			none or slight	moderate	heavy	very heavy
No. OF JARS					NET CLOGGING				
SIZE OF JAR (Circle One)	P	Q	P	Q					
FORMALIN & BORATE ADDED					NET WASHING	none	rinsed	washed	
ALCOHOL ADDED									
COLLECTORS INITS.					RIPS AND HOLES IN NET	none	location	when mended: (Circle one)	Before station After station

REMARKS: underestimated by 22m

NET TOW SHEET

10/15/14
DWS

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)	
						BEGIN TOW	END TOW
CCE-P1408	MV	3	Tow 1	321	2014-08-22	09:35	09:57

TIME	Min.	Sec.	NET NO.	METER NO.	PORT	STB.	TOW TYPE:	TOW NO.	OF	
SINKING (descend)	6	30					Shallow	1	OF	1
TOWING (at depth)		32	FINAL #485592	INITIAL 019233		453646*	SEA (Conditions): <u>Calm</u> Moderate			
Total (ascend)	16	15	DIFF.	MESH SIZE 202um			WIND: knots			

AMT. OF WIRE OUT: 2300 meters
 OBSERVERS: BWW, DJ, BV, JAB, RS

ANGLES	52	50	50	52	48	45	48	48	50	45	52	45	55	42	55
WIRE OUT	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160
ANGLES	42	55	48	52	45	55	42	50	45	48	52	42	48	35	38
WIRE OUT	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10

48
+10 +30

PORT		STB.		NET CLOGGING	none or slight	moderate	heavy	very heavy
No. OF JARS								
SIZE OF JAR (Circle One)	P	Q	P	Q				
FORMALIN & BORATE ADDED					none	rinsed	washed	
ALCOHOL ADDED					none	location	when mended: (Circle one)	Before station After station
COLLECTORS INTS.					RIPS AND HOLES IN NET			

REMARKS: 22 extra meters use the 485,592 + 453,646 more plausible flow meter #'s

485592
453646 31946

*041531 - reverse side final flow meter
041531
-019233 22298

NET TOW SHEET

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)	
						BEGIN TOW	END TOW
CCE-P1408	MV	3	2	334	2014-08-22	21:29	21:54

TIME	Min.	Sec.	NET NO.	PORT	STB.	TOW TYPE:
SINKING (descend)	6	45				Oblique
TOWING (at depth)		38	METER NO.			TOW NO. 1 OF 1
Total (ascend)	16	02	FINAL	525196		SEA (Conditions): <u>Calm</u>
			INITIAL	489971		(Circle one) Moderate
			DIFF.			Rough
			MESH SIZE	202µm		WIND: knots

AMT. OF WIRE OUT: 300 meters
 OBSERVERS: JAU, DS, CR, RS, AN
 TOTAL NO. OF ANGLES:

ANGLES	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160
	49	51	48	52	48	52	51	52	53	55	48	51	48	51	

ANGLES	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10
	45	48	42	48		52	47	49	45	50	40	50	39	47	39

51 45
-10 -20

		PORT	STB.					
No. OF JARS				NET CLOGGING	none or slight	moderate	heavy	very heavy
SIZE OF JAR (Circle One)	P	Q	P	Q				
FORMALIN & BORATE ADDED					NET WASHING	none	rinsed	washed
ALCOHOL ADDED								
COLLECTORS INITS.				RIPS AND HOLES IN NET	none	location	when mended: (Circle one)	Before station After station

REMARKS: ~~300~~ underestimated by 25m

Z = 2200m

NET TOW SHEET

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)	
						BEGIN TOW	END TOW
CCE-P1408	MV	3	Tow 3	349	2014-08-23	09:13	10:00

TIME	Min.	Sec.	NET NO.	METER NO.	PORT	STB.	TOW TYPE: <i>oblique</i>	TOW NO. 1 OF 1
SINKING (descend)	7	30					SEA (Conditions): <u>Calm</u>	
TOWING (at depth)	31		FINAL 563595	INITIAL 525194			(Circle one) Moderate	
Total (ascend)	17	01	DIFF.	MESH SIZE 202um			WIND: knots	

AMT. OF WIRE OUT: 300 meters	OBSERVERS: BMW, DS, BV, JAB
TOTAL NO. OF ANGLES:	

ANGLES	50	49	48	51	47	51	48	53	48	55	45	55	41	55	
WIRE OUT	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160
ANGLES	42	52	45	52	48	49	45	52	45	55	44	49	48	41	48
WIRE OUT	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10

		PORT		STB.					
No. OF JARS						none or slight	moderate	heavy	very heavy
SIZE OF JAR (Circle One)	P	Q	P	Q	NET CLOGGING				
FORMALIN & BORATE ADDED					NET WASHING	none	rinsed	washed	
ALCOHOL ADDED									
COLLECTORS INITS.					RIPS AND HOLES IN NET	none	location	when mended: (Circle one)	Before station After station

REMARKS: underestimated by 30 m

NET TOW SHEET ^{10/2/14} ₂₁₀₅

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)	
						BEGIN TOW	END TOW
CCE-P1408	MV	3	4	362	2014-08-23	21 ⁰⁰ 30	21 ⁰⁰ 55

TIME	Min.	Sec.	NET NO.	METER NO.	PORT	STB.	TOW TYPE:	TOW NO.	OF	
SINKING (descend)	6	47					Oblique	1	OF	1
TOWING (at depth)		31	FINAL	INITIAL	598506	563596	SEA (Conditions):	(Circle one) <u>Calm</u> Moderate Rough		
Total (ascend)	15	57	DIFF.	MESH SIZE	34910		WIND:	knots		

AMT. OF WIRE OUT:	300 meters	OBSERVERS:	JAG, RS, DJ, TJ
TOTAL NO. OF ANGLES:			

ANGLES	48	51	48	48	47	49	48	51	45	48	45	50	45	49		
WIRE OUT	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160	
ANGLES	43	46	42	48	42	48	39	48	37	45	35	45	42	42	47	48
WIRE OUT	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10	-10

	PORT		STB.			none or slight	moderate	heavy	very heavy
No. OF JARS					NET CLOGGING				
SIZE OF JAR (Circle One)	P	Q	P	Q					
FORMALIN & BORATE ADDED					NET WASHING	none	rinsed	washed	
ALCOHOL ADDED									
COLLECTORS INTS.					RIPS AND HOLES IN NET	none	location	when mended: (Circle one)	Before station After station

REMARKS:

NET TOW SHEET

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)									
						BEGIN TOW	END TOW								
CCE-P1408	MV	3	Tow 5	375	2014-08-24	09:33	09:58								
Bd:1297m															
TIME	Min.	Sec.		PORT	STB.	TOW TYPE: <i>oblique</i>									
SINKING (descend)	6	56	"	NET NO.		TOW NO. 1 OF 1									
				METER NO.		SEA (Conditions): <u>Calm</u>									
TOWING (at depth)		31	"	FINAL	635225	(Circle one) Moderate									
				INITIAL	598509	Rough									
Total (ascend)	16	19	"	DIFF.		WIND: knots									
				MESH SIZE	202um										
AMT. OF WIRE OUT: 300 meters				OBSERVERS: BMW, DJ, BV, JAB											
TOTAL NO. OF ANGLES:															
ANGLES	45	48	41	47	42	50	45	50	45	47	45	50	45	50	
WIRE OUT	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160
ANGLES	46	47	50	51	45	47	40	45	38	39	45	40	42	42	51
WIRE OUT	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10
-10															
PORT		STB.													
No. OF JARS						none or slight	moderate	heavy	very heavy						
SIZE OF JAR (Circle One)	P	Q	P	Q	NET CLOGGING										
FORMALIN & BORATE ADDED					NET WASHING	none	rinsed	washed							
ALCOHOL ADDED					RIPS AND HOLES IN NET	none	location	when mended: (Circle one)	Before station						
COLLECTORS INITS.								After station							
REMARKS: 30m extra wire out															

NET TOW SHEET

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)									
						BEGIN TOW	END TOW								
CCE-P1408	MV	3	6	388	2014-08-24	22 ⁰⁰	22 ⁰⁵								
TIME		Min.	Sec.		PORT	STB.	TOW TYPE: <i>Oblique</i>								
SINKING (descend)		6	43"	NET NO.			TOW NO. 1 OF 1								
TOWING (at depth)			31"	METER NO.			SEA (Conditions): <u>Calm</u> (Circle one) Moderate Rough								
Total (ascend)		15	30"	FINAL	668887		WIND: knots								
				INITIAL	655210										
				DIFF.											
				MESH SIZE											
AMT. OF WIRE OUT: 300 meters				OBSERVERS: JAS, DJ, MDO, RS, TB											
TOTAL NO. OF ANGLES:															
ANGLES		43	47	42	50	42	52	42	53	44	55	42	52	45	
WIRE OUT	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160
ANGLES		45	50	42	52	45	49	43	47	40	42	35	35	42	48
WIRE OUT	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10
PORT		STB.													
No. OF JARS						none or slight	moderate	heavy	very heavy						
SIZE OF JAR (Circle One)	P	Q	P	Q	NET CLOGGING										
FORMALIN & BORATE ADDED					NET WASHING	none	rinsed	washed							
ALCOHOL ADDED					RIPS AND HOLES IN NET	none	location	when mended: (Circle one)	Before station						
COLLECTORS INITS.								After station							
REMARKS: underestimated by 10															

not using
tow

NET TOW SHEET

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)	
						BEGIN TOW	END TOW
CCE-P1408	MV	4	Tow 1		2014-08-26	09:31	09:55

Z_{bottom} = 3966m

TIME	Min.	Sec.	NET NO.	METER NO.	PORT	STB.	TOW TYPE: <i>Oblique</i>
SINKING (descend)	7	13					TOW NO. 1 OF 1
TOWING (at depth)		30	FINAL	INITIAL	706888	668882	SEA (Conditions): <u>Calm</u> Moderate Rough
Total (ascend)	14	29	DIFF.	MESH SIZE		202µm	WIND: knots

AMT. OF WIRE OUT: 300 meters
OBSERVERS: JAB, DS, BMW, SV
TOTAL NO. OF ANGLES:

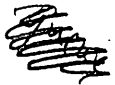
ANGLES	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160
ANGLES	45	45	45	43	43	43	45	45	42	45	43	50	42	49	
WIRE OUT	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10

410
-10

PORT		STB.		NET CLOGGING	NET WASHING	RIPS AND HOLES IN NET	none or slight	moderate	heavy	very heavy
No. OF JARS	SIZE OF JAR (Circle One)	FORMALIN & BORATE ADDED	ALCOHOL ADDED							
	P Q	P Q								

location
Port Side

REMARKS: underestimated by 33m
Port net wrapped around brace, very small sample, tore net. Repairing and redoing sample



NET TOW SHEET

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)	
						BEGIN TOW	END TOW
CCE-P1408	MV	4	1	417	2014-08-26	10:19	10:44

BD: deep

TIME	Min.	Sec.	NET NO.	METER NO.	PORT	STB.	TOW TYPE:	TOW NO.	OF	OF
SINKING (descend)	7	24					Oblique	1	1	1
TOWING (at depth)		31	FINAL	747436			SEA (Conditions):			
			INITIAL	706888			(Circle one)			
Total (ascend)	15	15	DIFF.				WIND:			knots
			MESH SIZE	202µm	202µm					

AMT. OF WIRE OUT: 500 meters
 TOTAL NO. OF ANGLES:
 OBSERVERS: BMW, DS, JAS, BV, MDO, TJ

ANGLES	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160
	50	50	45	53	46	52	47	48	45	48	48	47	47	48	

ANGLES	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10
	49	48	45	49	46	47	45	45	42	42	43	42	43	37	45

48
-10

		PORT		STB.									
No. OF JARS						none or slight	moderate	heavy	very heavy				
SIZE OF JAR (Circle One)	P	Q	P	Q	NET CLOGGING								
FORMALIN & BORATE ADDED					NET WASHING	none	rinsed	washed					
ALCOHOL ADDED					RIPS AND HOLES IN NET	none	location	when mended: (Circle one)	Before station				
COLLECTORS INITS.									After station				

REMARKS: * flowmeters have been on starboard every time * underestimated by JZM

NET TOW SHEET

10/10/14
PWS



CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)	
						BEGIN TOW	END TOW
CCE-P1408	MV	4	2	427	2014-08-26	21:57	22:01

TIME	Min.	Sec.	NET NO.	METER NO.	PORT	STB.	TOW TYPE:	TOW NO.	SEA (Conditions):	WIND:
SINKING (descend)	6	47"					Oblique	1 OF 1	Calm	
TOWING (at depth)		33"	FINAL	INITIAL					Moderate	
									Rough	
Total (ascend)	16	00"	DIFF.	MESH SIZE						knots

AMT. OF WIRE OUT:	300 meters	OBSERVERS:	JAS, MDO, DJ, RS, TR, EK
TOTAL NO. OF ANGLES:			

ANGLES	45	47	45	48	46	50	45	52	48	51	45	50	45	52	
WIRE OUT	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160

ANGLES	48	50	45	49	45	48	47	45	46	45	50	45	48	40	45	42
WIRE OUT	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10	-10

		PORT		STB.					
No. OF JARS						none or slight	moderate	heavy	very heavy
SIZE OF JAR (Circle One)	P	Q	P	Q		NET CLOGGING			
FORMALIN & BORATE ADDED						none	rinsed	washed	
ALCOHOL ADDED						NET WASHING			
COLLECTORS INITS.						none	location	when mended: (Circle one)	Before station After station

REMARKS: underestimated by

NET TOW SHEET

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)	
						BEGIN TOW	END TOW
CCE-P1408	MV	4	3	438	2014-08-27	9:32	9:58

203949m

TIME	Min.	Sec.	NET NO.	METER NO.	PORT	STB.	TOW TYPE:	TOW NO.	OF	OF
SINKING (descend)	7	42					Oblique	1		1
TOWING (at depth)		31	FINAL 828079	INITIAL 781567			SEA (Conditions): <u>Calm</u> Moderate Rough			
Total (ascend)	16	43	DIFF.				WIND: knots			
			MESH SIZE	202um	202um					

AMT. OF WIRE OUT: 300 meters
 TOTAL NO. OF ANGLES:
 OBSERVERS: BMM, JAT, DS, BV

ANGLES	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160
	45	52	49	52	42	50	46	50	42	49	49	53	48	50	
ANGLES	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10
	48	48	49	50	44	45	42	49	42	43	45	39	49	35	43

44
-10

		PORT		STB.									
No. OF JARS						NET CLOGGING	none or slight	moderate	heavy	very heavy			
SIZE OF JAR (Circle One)	P	Q	P	Q		NET WASHING	none	rinsed	washed				
FORMALIN & BORATE ADDED						RIPS AND HOLES IN NET	none	location	when mended: (Circle one)	Before station	After station		
ALCOHOL ADDED													
COLLECTORS INITS.													

REMARKS: underestimated by 38m

NET TOW SHEET

Oct 2014
RWS

27

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)	
						BEGIN TOW	END TOW
CCE-P1408	MV	4	4	449	2014-08-28	21:35	21:59

TIME	Min.	Sec.	NET NO.	METER NO.	PORT	STB.	TOW TYPE: <i>Oblique</i>	TOW NO. 1 OF 1
SINKING (descend)	6	39					SEA (Conditions): <i>Calm</i>	
TOWING (at depth)		33	FINAL	INITIAL			<i>Calm</i>	
							Moderate	
							Rough	
Total (ascend)	15	42	DIFF.	MESH SIZE			WIND: knots	
					702m	702m		

AMT. OF WIRE OUT: 300 meters	OBSERVERS: JAB, TS, RS, DJ
TOTAL NO. OF ANGLES:	

ANGLES	42	48	40	48	39	45	35	46	39	45	40	30	40	47	
WIRE OUT	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160
ANGLES	40	46	38	45	40	42	39	47	35	45	37	42	33	38	40
WIRE OUT	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10

		PORT		STB.					
No. OF JARS						none or slight	moderate	heavy	very heavy
SIZE OF JAR (Circle One)	P	Q	P	Q	NET CLOGGING				
FORMALIN & BORATE ADDED					NET WASHING	none	rinsed	washed	
ALCOHOL ADDED									
COLLECTORS INTS.					RIPS AND HOLES IN NET	none	location	when mended: (Circle one)	Before station After station

REMARKS: underestimated by 14 m

NET TOW SHEET *10/10/14*

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)	
						BEGIN TOW	END TOW
CCE-P1408	MV	4	Tow 5	465	2014-08-28	9:38	10:08

Z_{bottom} = 3900m

TIME	Min.	Sec.	NET NO.	METER NO.	PORT	STB.	TOW TYPE: <i>Oblique</i>
SINKING (descend)	8	38		<i>26633</i>			TOW NO. 1 OF 1
TOWING (at depth)		30	FINAL	<i>906824</i>			SEA (Conditions): <u>Calm</u> (Circle one) Moderate Rough
Total (ascend)	<i>17</i>	<i>55</i>	DIFF.				WIND: knots
			MESH SIZE	<i>202µm</i>			

AMT. OF WIRE OUT: *300* meters
 TOTAL NO. OF ANGLES:
 OBSERVERS: *JAB, BMW, G, BV*

ANGLES	<i>50</i>	<i>45</i>	<i>50</i>	<i>45</i>	<i>52</i>	<i>42</i>	<i>52</i>	<i>45</i>	<i>52</i>	<i>48</i>	<i>52</i>	<i>48</i>	<i>52</i>	<i>48</i>	<i>52</i>
WIRE OUT	<i>300</i>	<i>290</i>	<i>280</i>	<i>270</i>	<i>260</i>	<i>250</i>	<i>240</i>	<i>230</i>	<i>220</i>	<i>210</i>	<i>200</i>	<i>190</i>	<i>180</i>	<i>170</i>	<i>160</i>
ANGLES	<i>48</i>	<i>50</i>	<i>42</i>	<i>-</i>	<i>42</i>	<i>50</i>	<i>42</i>	<i>48</i>	<i>45</i>	<i>52</i>	<i>45</i>	<i>48</i>	<i>48</i>	<i>45</i>	<i>48</i>
WIRE OUT	<i>150</i>	<i>140</i>	<i>130</i>	<i>120</i>	<i>110</i>	<i>100</i>	<i>90</i>	<i>80</i>	<i>70</i>	<i>60</i>	<i>50</i>	<i>40</i>	<i>30</i>	<i>20</i>	<i>10</i>

		PORT		STB.					
No. OF JARS						none or slight	moderate	heavy	very heavy
SIZE OF JAR (Circle One)	P	Q	P	Q	NET CLOGGING				
FORMALIN & BORATE ADDED					NET WASHING		none	rinsed	washed
ALCOHOL ADDED					RIPS AND HOLES IN NET		none	location	when mended: Before station (Circle one) After station
COLLECTORS INITS.									

REMARKS: *Underestimated by 37m*

NET TOW SHEET

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)									
						BEGIN TOW	END TOW								
CCE-P1408	MV	4	6	480	2014-08-28	22:55	23:19								
TIME		Min.	Sec.	PORT	STB.	TOW TYPE: <i>Oblique</i>									
SINKING (descend)		6	40	NET NO.		TOW NO. 1 OF 1									
TOWING (at depth)		31		METER NO.		SEA (Conditions): <u>Calm</u> (Circle one) Moderate Rough									
Total (ascend)		15	16	FINAL	944330	WIND: knots									
				INITIAL	906814										
				DIFF.											
				MESH SIZE	206µm	207µm									
AMT. OF WIRE OUT: 300 meters				OBSERVERS:											
TOTAL NO. OF ANGLES:				JAB, DS, MDO, RS, TP											
ANGLES		40	42	38	42	40	43	42	43	43	46	45		45	46
WIRE OUT	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160
ANGLES	45	46	45	49		50	40	45	40	47	40	40		40	40
WIRE OUT	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10
PORT		STB.		No. OF JARS		NET CLOGGING		NET WASHING		RIPS AND HOLES IN NET		COLLECTORS INITS.			
						none or slight		rinsed		none					
				SIZE OF JAR (Circle One)		moderate		washed		location		when mended: (Circle one)		Before station	
				P Q P Q										After station	
				FORMALIN & BORATE ADDED											
				ALCOHOL ADDED											
				REMARKS:											
														underestimated by 12 meters	

-10

NET TOW SHEET

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)									
						BEGIN TOW	END TOW								
CCE-P1408	MV	5	Tow 1	509	2014-08-30	09:33	09:57								
Z _{bottom} = 4537															
TIME	Min.	Sec.		PORT	STB.	TOW TYPE: <i>Oblique</i>									
SINKING (descend)	7	38	NET NO.			TOW NO. 1 OF 1									
TOWING (at depth)		30	METER NO.			SEA (Conditions): <u>Calm</u> (Circle one) Moderate Rough									
Total (ascend)	14	21	FINAL			WIND: knots									
			INITIAL	944337											
			DIFF.	979629											
			MESH SIZE	202µm											
AMT. OF WIRE OUT: → 300 meters				OBSERVERS:											
TOTAL NO. OF ANGLES:				BV, JAB, BMW, TR, DJ											
ANGLES	45	45	50	42	52	45	52	45	50	45	50	45	48	45	48
WIRE OUT	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160
ANGLES	45	52	42	52	42	50	45	48	45	48	50	40	48	40	48
WIRE OUT	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10
48 +10 +30															
PORT STB.															
No. OF JARS															
SIZE OF JAR (Circle One)	P	Q	P	Q	NET CLOGGING		none or slight	moderate	heavy	very heavy					
FORMALIN & BORATE ADDED					NET WASHING		none	rinsed	washed						
ALCOHOL ADDED					RIPS AND HOLES IN NET		none	location	when mended: (Circle one)		Before station After station				
COLLECTORS INITS.															
REMARKS:															

2008-2014 RWS

10/13/14 PLS

NET TOW SHEET

10/10/14
2015

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)	
						BEGIN TOW	END TOW
CCE-P1408	MV	S	Z	523	2014-08-30	23:13	23:37

TIME	Min.	Sec.	PORT	STB.	TOW TYPE:
SINKING (descend)	6	44"	NET NO.		Oblique
TOWING (at depth)	7	34"	METER NO.		TOW NO. 1 OF 11
Total (ascend)	15	26"	FINAL	015398*	SEA (Conditions): <u>Calm</u>
			INITIAL	079599	(Circle one) Moderate
			DIFF.		Rough
			MESH SIZE	70µm	WIND: knots

AMT. OF WIRE OUT: 300 meters
 TOTAL NO. OF ANGLES:
 OBSERVERS: JAO, MDO, TU, RI, DJ

ANGLES	32	35	25	35	22	35	28	35	30	35	32	35	33	37	
WIRE OUT	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160
ANGLES	33	35	42	36	42	38	45	35	45	39	45	41	45	33	42
WIRE OUT	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10

-10

		PORT		STB.						
No. OF JARS						NET CLOGGING	none or slight	moderate	heavy	very heavy
SIZE OF JAR (Circle One)	P	Q	P	Q		NET WASHING	none	rinsed	washed	
FORMALIN & BORATE ADDED						RIPS AND HOLES IN NET	none	location	when mended: (Circle one)	Before station
ALCOHOL ADDED										After station
COLLECTORS INITS.										

REMARKS: *[Signature]* The first digit of flowmeter didn't advance. Should be 115398.

NET TOW SHEET

sun, sun, Mr. Golden Sun, please shine down on me!

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)	
						BEGIN TOW	END TOW
CCE-P1408	MV	5	3	536	2014-08-31	9:42	10:09

TIME	Min.	Sec.	PORT	STB.	TOW TYPE:
SINKING (descend)	7	11			Oblique
TOWING (at depth)		30			
Total (ascend)	16	38			

NET NO.		TOW NO. 1 OF 1
METER NO.		SEA (Conditions): Calm
FINAL 056799		(Circle one) Moderate
INITIAL 015400		Rough
DIFF.		WIND: knots
MESH SIZE 202 _{µm}	202 _{µm}	

AMT. OF WIRE OUT: 300 meters OBSERVERS: JAB, DJ, BV, TB

TOTAL NO. OF ANGLES:

ANGLES	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160
	42	42	40	43	41	40	43		45	51	40	47	42	45	

ANGLES	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10
	43	45	39	45	44	43	45	40	45	40	43	42	45	40	42

42
-10

		PORT		STB.					
No. OF JARS						none or slight	moderate	heavy	very heavy
SIZE OF JAR (Circle One)	P	Q	P	Q	NET CLOGGING				
FORMALIN & BORATE ADDED					NET WASHING		none	rinsed	washed
ALCOHOL ADDED					RIPS AND HOLES IN NET		none	location	when mended: Before station
COLLECTORS INTS.									After station

REMARKS: underestimated by 20m

NET TOW SHEET

10/11/14
10/11/14

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)	
						BEGIN TOW	END TOW
CCE-P1408	MV	5	4	550	2014-08-31	21:32	21:56

bd: deep

TIME	Min.	Sec.	NET NO.	METER NO.	PORT	STB.	TOW TYPE:	TOW NO.	OF
SINKING (descend)	6	30					Oblique	1	1
TOWING (at depth)		31	FINAL 094690				SEA (Conditions): (Circle one) <u>Calm</u> Moderate Rough		
Total (ascend)	15	25	DIFF.				WIND: 10kts	knots	
AMT. OF WIRE OUT: 300 meters			OBSERVERS: JAB, TB, DJ, RS						
TOTAL NO. OF ANGLES:									

ANGLES	32	38	30	42	35	42	35	40	35	45	32	43	30	42	
WIRE OUT	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160
ANGLES	25	43	32	40	38	42	38	42	40	45	38	42	42	40	40
WIRE OUT	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10

		PORT		STB.					
No. OF JARS						none or slight	moderate	heavy	very heavy
SIZE OF JAR (Circle One)	P	Q	P	Q	NET CLOGGING				
FORMALIN & BORATE ADDED					NET WASHING		none	rinsed	washed
ALCOHOL ADDED					RIPS AND HOLES IN NET		none	location	when mended: (Circle one) Before station After station
COLLECTORS INITS.									

REMARKS:
 - net w/o flowmeter folded over, caught on brace
 - part side
 - wire didn't underestimate at all right at 0m
 - net flipped in air, port and starboard switched
 - stuck in air

NET TOW SHEET

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)	
						BEGIN TOW	END TOW
CCE-P1408	MV	5	5	563	2014-09-01	9:54	10:05

$Z_{bottom} = 4419\text{m}$

TIME	Min.	Sec.	PORT	STB.	TOW TYPE: <i>Obligue</i>
SINKING (descend)	10	33	NET NO.		TOW NO. 1 OF 1
TOWING (at depth)		31	METER NO.		SEA (Conditions): <u>Calm</u> (Circle one) <u>Moderate</u> Rough
Total (ascend)	16	14	FINAL	136508	WIND: knots
			INITIAL	093995	
			DIFF.		
			MESH SIZE	202 μm	

AMT. OF WIRE OUT: 300 meters
OBSERVERS: JAB, BMW, DJ, TR, BV

TOTAL NO. OF ANGLES:

ANGLES	42 42 45 40 43 42 41 40 47 43 45 43 45														
WIRE OUT	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160
ANGLES	42 42 42 42 42 52 49 45 37 48 30 42 38 39 43														
WIRE OUT	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10

$\frac{43}{-10}$

		PORT	STB.					
No. OF JARS				NET CLOGGING	none or slight	moderate	heavy	very heavy
SIZE OF JAR (Circle One)	P	Q	P	Q				
FORMALIN & BORATE ADDED					NET WASHING	none	rinsed	washed
ALCOHOL ADDED								
COLLECTORS INITS.					RIPS AND HOLES IN NET	none	location	when mended: (Circle one) Before station After station

REMARKS: - going down at ~ 70 m/minute due to tension issues
Underestimated by 34m

NET TOW SHEET

CRUISE	SHIP	CYCLE	ORDER OCCUPIED	EVENT # (Deployed)	DATE YR MO DY	HOUR (PDT)	
						BEGIN TOW	END TOW
CCE-P1408	MV	5	6	551	2014-09-01	21:52	22:18

TIME	Min.	Sec.	NET NO.	METER NO.	FINAL	INITIAL	DIFF.	MESH SIZE	AMT. OF WIRE OUT:	OBSERVERS:
SINKING (descend)	8	11		26633	80879	136508		202 μ 202 μ m	300 meters	JATS, RS, MDO, TJ
TOWING (at depth)		30								
Total (ascend)	16	05								

ANGLES	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160
ANGLES	42	43	42	47	40	42	41	40	50	41	42	43	46		
WIRE OUT	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160
ANGLES	38	43	40	45	40	36	42	40	35	35	35	42	42	38	35
WIRE OUT	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10

		PORT		STB.					
No. OF JARS						none or slight	moderate	heavy	very heavy
SIZE OF JAR (Circle One)	P	Q	P	Q		NET CLOGGING			
FORMALIN & BORATE ADDED						NET WASHING	none	rinsed	washed
ALCOHOL ADDED							none	location	when mended: Before station
COLLECTORS INTS.						RIPS AND HOLES IN NET			(Circle one) After station

REMARKS: underestimated by

Samples lost when MVE #4 Dewar thawed on 23 May 2016:

Gut Fluorescence Cycle 4, Tow 3: Dishes 121-124, 126-129

Biomass Cycle 4, Tow 4: Dishes 117-119, 134-144

Gut Fluorescence 1 mm Cycle 4, Tow 4: Dishes 125, 131-140

Biomass Cycle 4, Tow 5: Dishes 145-151

Gut Fluorescence Cycle 4, Tow 5: Dishes 141-149

Gut Contents Cycle 4, Tow 6: Cup 38

Biomass Cycle 4, Tow 6: Dishes 152-157,159-160

Gut Fluorescence Cycle 4, Tow 6: Dishes 150-157,159

All kept, frozen in box on 24 May 2016