DAILY SCIENCE LOG BOOK

MISSION NUMBER 2012-59

DATE: From: Aug 31/2012 to: 11 SEPT 2012

VESSEL: Tully

PROJECT(S): LaPerouse

Water Properties Group
Fisheries and Oceans Canada
Institute of Ocean Sciences
Ocean Sciences Division
Sidney, BC, Canada

WaterProperties.ca

Captain: MIKE CORFIELD First Officer: JODI HESKE
Second Officer: COLIN MILBURN Third Officer: RYAN GURR
Fishing Master: ______

Mission Participants / Agencies: DFO/IOS, UBC, UVIC

Scientific Personnel: Chief Scientist: MARIE ROBERT 07-19 A

Name	Watch	Cabin	Name	Watch	Cabin
MELISSA HENNEKES	HPLC	B			
MOIRA GALBRAITH	12-24	C			
JENNIFER LONG	12-24	D			
MARIE-CLAIRE VEILLEUX-POPPIANO	00-12	D			
CHELSEA STANLEY	12-24	E			
STEVE ROMAINE	00-12	F			
DAVE CAPELLE	12-24	G			
MARCOS LAGUNA	00-12	G			
NEIL DANGERFIELD	NH4	H			

Second leg of Mission: Chief Scientist: ______

Name	Watch	Cabin	Name	Watch	Cabin

Data logging computer: ______
Data acquisition program: ______
CTD deck unit make: SBE model: 11+ serial number: 0471

Primary CTD
Make: SBE model: 9+ serial number: 506
Primary temperature serial number: 2374
Primary conductivity serial number: 3396
Secondary temperature serial number: 2668
Secondary conductivity serial number: 2754
Transmissometer: C Star Model: WETLABS s/n: 1396DR
Fluorometer: Model SEAPOINT Cable gain: 3X s/n: 2228 **P**, **S** or **NO** pump?
Oxygen sensor: SBE Model: 43 s/n: 1119 **P**, **S** or **NO** pump?
PAR sensor: BIO SPHERE Model: 200 s/n: 4601
Other sensors: WETLABS ECO Fluorometer s/n: 2214 **P**, **S** or **NO** pump?
Other sensors: ______ s/n: ______ **P**, **S** or **NO** pump?
Other sensors: ______ s/n: ______ **P**, **S** or **NO** pump?
Other sensors: ______ s/n: ______ **P**, **S** or **NO** pump?

Secondary CTD
Make: ______ model: ______ serial number: ______
Primary temperature serial number: ______
Primary conductivity serial number: ______
Secondary temperature serial number: ______
Secondary conductivity serial number: ______
Transmissometer: ______ Model: ______ s/n: ______
Fluorometer: Model ______ Cable gain: ______ s/n: ______ **P**, **S** or **NO** pump?
Oxygen sensor: ______ Model: ______ s/n: ______ **P**, **S** or **NO** pump?
PAR sensor: ______ Model: ______ s/n: ______
Other sensors: ______ s/n: ______ **P**, **S** or **NO** pump?
Other sensors: ______ s/n: ______ **P**, **S** or **NO** pump?
Other sensors: ______ s/n: ______ **P**, **S** or **NO** pump?
Other sensors: ______ s/n: ______ **P**, **S** or **NO** pump?

CTD calibration bottle location (height above CTD in metres): ______

Rosette Setup:
Number of bottles: 24
Manufacturer: IO3
Volume of bottles (litres): 10L

Winches:
1. Make: ______ Model: ______ Serial #: ______ Used for: ______
2. Make: ______ Model: ______ Serial #: ______ Used for: ______
3. Make: ______ Model: ______ Serial #: ______ Used for: ______

Comments on performance during cruise (comments should also be reflected in the post-cruise report):

~~Salinometer~~:
Make: ______ Model: ______ Serial Number: ______

Comments on performance during cruise (comments should also be reflected in the post-cruise report):

Oxygen Kit(s):
Make: ______ Model: ______ Kit Number: ______
Make: ______ Model: ______ Kit Number: ______

Comments on performance during cruise (comments should also be reflected in the post-cruise report):

Thermosalinograph System (SBE21):
Program: SEASAVE Version: ______
Sampling interval (seconds): 30
Fluorometer sensor serial number: WS3S-713P

Comments on performance during cruise (comments should also be reflected in the post-cruise report):

ADCP Setup:
Computer time zone: ______ User Exits: Name: ______ Exit points: ______
Sampling interval (sec): ______ Name: ______ Exit points: ______
Bin Length: (2^x): ______ Name: ______ Exit points: ______
Pulse Length: ______ Work File: ______
Buffer (bytes): ______
Gyro Offset: ______

Comments on performance during cruise (comments should also be reflected in the post-cruise report):

CTD Test Cast Information

Test Cast along side? Yes ☐ No ☒
Comments ______

Test Cast in Saanich Inlet or other location? Yes ☑ No ☐
Comments ______

CTD pressure reading on deck (db), before cast: -0.41 after cast: -0.45

Pumps working? Yes ☑ (0011) No ☐ (0010)

Secondary Temp – Primary Temp: ______
(Average from the mixed region)

Secondary Salinity – Primary Salinity: ______
(Average from the mixed region)

Additional Comments:

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Page 1 of ____

Month August | **Year** 2012 | **Ship** JP Tully | **Cruise ID** 2012-59

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
31	SI	2241	BE	ROS	US	001	48°39.372	123° 29.450	100			1	ALL OF US!	Y	
		2243	BO				48°39.372	123° 29.450		95					
Sept		2245	EN				48°39.370	123° 29.450							
01	LB01	1008	BE	RCB	US	2	48 40.41	124 59.42	36		1-3	3	SR	✓	
		1009	BO				40.40	59.41		27					
		1012	EN				40.39	59.40							
01	LB02	1057	BE	ROS	US	3	48 39.02	125 2.45	57		4-9	6	SR	✓	
		1059	BO				39.04	2.44		51					
		1105	EN				39.10	2.45							
01	LB03	1157	BE	ROS		4	48 37.40	125 5.65	93				SR	✓	Ran out of bots
		1159	BO				37.38	5.65		85					water due to training
		1201	EN				37.36	5.66							Loss
01	LB04	1231	BE	ROS	US	5	48 35.72	125 8.82	112		10-17	8	SR	✓	
		1234	BO				35.77	8.82		104					
		1243	EN				35.83	8.84							
01	E1	1327	BE	ROS		6	48 31.74	125 3.84	115				SR		
		1329	BO				31.75	3.80		106					
		1332	EN				31.76	3.81							
01	E1	1410	BO	NET		7	48 31.833	125 03.542	115	105			SR		Bongo WH

Cast Type:
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- CTD = CTD without Rosette
- ROS = Rosette plus CTD
- SET = Fish Set
- USW = Sea Water Loop
- MOR = Mooring
- NET = Plankton Net Haul
- DRF = Drifter
- ____ = ____________

Bottle Firing Method:
- US = Up / Stop
- UN = Up / No stop
- DN = Down / No stop

Time Code:
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- RE = Recover Mooring Time

Transmissometer to be cleaned before each cast, do not use Ammonia products

Notes: ____________________

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month Sept **Year** 2012 **Ship** Tully **Cruise ID** 2012-59

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
1	LB05	1459	BE	ROS		8	48 33.96	125 12.07			—		SR	✓	
		1501	BO				33.95	12.06							
		1502	EN				33.93	12.06							
1	LB06	1529	BE	ROS	US	9	48 32.12	125 15.80	115		18-31	14	SM/SR	✓	
		1532	BO				32.09	15.82		107					
		1543	EN				32.078	15.838							
1	C1	1617	BE	ROS		10	48 28.84	125 15.46	153		—	—	SR	✓	
		1619	BO				28.84	15.46							
		1622	EN				28.84	15.47							
1	C1	1633	BO	NET		11	48 28.84	125 15.45	152	140			SR		
1	C2	1723	BE	ROS		12	48 26.21	125 9.61	160				SR	✓	Paused @ 110m
		1727	BO				26.21	9.67		152	—	Ø			due to odd altimeter
		1730	EN				26.22	9.70							reading
1	C2	1740	BO	NET		13	48 26.22	125 9.70	160	155			SR		
1	C3	1855	BE	ROS		14	48 23.44	125 20.42	123				MR	✓	
		1858	BO				48 23.44	125 20.43		115	—	Ø			
		1900	EN				48 23.44	125 20.43							
1	C3	1912	BO	NET		15	48 23.45	125 20.39	123	113			MG		
		1914	EN				48 23.45	125 20.41							

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DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month	SEPTEMBER	Year	2012	Ship	TULLY	Cruise ID	2012-59

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information: Latitude	Positional Information: Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
1	LB07	2046	BE	ROS	—	16	48' 28 70	125' 22.09	158				MR	✓	
		2049	BO				48' 28.71	125' 22.09		149	—	∅			
		2052	EN				48' 28.71	125' 22.09							
1	LB07	2058	BE	NET		17	48 28.72	125 22.07	158				MG		
		2104	BO				48' 28.74	125' 22.05		147					
		2107	EN				48 28.75	125' 22.04							
1	B8	2204	BE	ROS	—	18	48' 34.56	125 30.03	114				MR	✓	
		2206	BO		/		48' 34.57	125 30.01		105	—	∅			
		2209	EN				48' 34.58	125 30.00							
1	B8	2214	BE	NET		19	48° 34.59	125° 29.96	114				MG		
		22.18	BO				48° 34.62	125° 29.92		104	—	∅			
		22:20	EN				48° 34.64	125° 29.90							
1	B7	2259	BE	ROS	—	20	48° 32; 134	125° 35 3 56	81		—	∅	CS	✓	
		23:01	BO				48° 32 149	125° 35 330		71					
		2303	EN				48° 32. 159	125° 35° 318							
1	B7	2312	BE	NET	—	21	48' 32.204	125' 35 .299	81		—	∅	MG		
		2316	BO				48° 32 181	125° 35.303		70					
		2317	EN				48° 32. 175	125° 35. 296							

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Notes: ____________________

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month September **Year** 2012 **Ship** JP Tully **Cruise ID** 2012-59

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
2	LB08	0017	BE	NET		22	48 25.47	125 28.77	141			Ø	MG		
		0023	BO				48 25.46	125 28.79		138					
		0026	EN				48 25.47	125 28.81							
2	LB03	0036	BE	ROS	US	23	48 25.48	125 28.81	140				MR	✓	
		0040	BO				48 25.51	125 28.78		136	32-41	10			
		0052	EN				48 25.50	125 28.68							
2	LB09	0131	BE	ROS	US	24	48 21.979	125 34.762	150		43-52	10	CS	✓	
		0139	BO				48 21.989	125 34.746		140					
		0150	EN				48 21.893	125 34.762							
2	LB10	0234	BE	ROS	US	25	48 18.533	125 41.119	151		—	Ø	CS	✓	
		0242	BO				48 18.515	125 41.116		141					
		0245	EN				48°18.514	125°41.113							
2	LB11	0330	BE	ROS	US	26	48°15.174	125°47.777	204		53-63	11	CS		
		0339	BO				48°15.163	125°47.786		194					
		0348	EN				48°15.154	125°47.813							
2	LB11	0355	BE	NET		27	48 15.17	125 47.81	206		—		MG		
		0402	BO				48 15.19	125 47.83		195					
		0406	EN				48 15.18	125 47.83							

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Notes: ________________________________

This page is for any notes or observations

- MOIRA STOPPED TSG BEFORE LBOG TO CLEAN FILTER, BACK WORKING NOW

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month	September	Year	2012	Ship	JP TULLY	Cruise ID	2012-59

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
2	LB12	0441	BE	Ros	US	28	48 12.979	125° 51.864	504		65 - 80	16	CS		
		0449	BO				48 12.991	125° 51.851		494					
		0510	EN				48 12.984	125° 51.869							
2	LB13	0626	BE	Ros		29	48° 10.586	125° 56.244	908		—	Ø	CS		PAR OFF
		0641	BO				48° 10.626	125° 56.242		898					
		0658	EN				48° 10.65	125° 56.29							
2	LB14	0727	BE	Ros	US	30	48 8.52	126 0.03	1176		81 - 98	18			
		0749	BO				48 8.59	125 59.91							
		0831	EN				8.57	59.68							
2	LB15	0919	BE	ROS	—	31	48 4.45	126 8.31	1535		—	—	SR	✓	
		0942	BO				4.46	8.30		1525					
		1004	EN				4.39	8.13							
2	LB16	1055	BE	ROS		32	48 0.53	126 16.95	1793		—	—	SR	✓	
		1129	BO				0.47	16.98		1783					
		1156	EN				0.51	16.96							
2	LC12	1407	BE	ROS		33	48 14.99	126 39.93	2523		~~106 - 115~~	~~10~~	SR	✓	
		1438	BO				48 14.94	126 39.90		2005					
		1509	EN				14.92	39.77							

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Notes: ______

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month Sept **Year** 2012 **Ship** Tully **Cruise ID** 2012-59

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Positional Information Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
2	LC12	1521		NET		34	48 14.93	126 39.75	2529	250					~~UVIC light +~~
															~~CHL max cast~~
2	LC12	1542	BE	ROS	US	35	48 14.91	126 39.68	2529		106-111	6	SR	✓	PAR ON
		1543	BO				14.92	39.66		100					
		1545	EN				14.91	39.66							
2	LC12	1600	BE	NET	UN	36	48 14.85	126 39.65	2526				MG		multinet
		1716	BO				14.80	39.24		2505					
		1757	EN				14.88	39.01							
2	LC11	1901	BE	ROS	US	37	48 18.98	126 26.26	1434				MR	✓	PAR off
		1927	BO				48 18.98	126 26.45	1415	1420	112-131	20			
		2008	EN				48 18.97	126 26.58							
2	LC10	2100	BE	ROS	✓	38	48 22.31	126 20.43	1253				MR	✓	MAX ~15
		2123	BO				48 22.30	126 20.48		1250	—	∅			CHL MAX 15
		2144	EN				48 22.28	126 20.48							
2	LC09	2322	BE	NET		39	48° 25.75	126 14.32	692						
		2333	BO				25.71	14.34		250					LOST WINCH SPEED
		2343	EN				25.66	14.40							

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Notes: ____

Produced by the Water Properties Group, IOS

WaterProperties.ca
Version: 06 March 2008

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month SEPTEMBER **Year** 2012 **Ship** TULLY **Cruise ID** 2012-59

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
2	LC09	2237	BE	ROS	US	40	48 25.87	126 14.00	649					✓	Ros 40 done before bongo 39 b/c winch problems
		2249	BO				48 25.84	126 14.05	654	645	132 - 149	18	MR		
		2314	EN				48 25.77	126 14.24							
3	A2	0041	BE	ROS	–	41	48 22.71	126 03.93	350				MR	✓	PAR ON
		0047	BO				48° 22.69	126° 03.92		340	—	∅			
		0053	EN				48° 22.71	126° 03.89							
3	A2	0101	BE	NET	—	42	48° 22.69	126° 03.89	350			∅	MG		
		0109	BO				48° 22.68	126° 03.88		250.					
		0118	EN				48° 22.68	126° 03.85							
3	LL08	0212	BE	ROS	US	43	48 29.46	126 07.12			150-160	11	CS.	✓	
		0216	BO				48° 29.47	126° 07.08							
		0229	EN				48° 29.48	126° 06.93							
3	LL08	0237	BE	NET	–	44	48 29.45	126 6.87	196		—	—	MG		
		0244	BO				29.45	6.83		186					
		0248	EN				29.44	6.79							
3	LL07	0336	BE	ROS	—	45	48° 32.928	126° 00.49	126		161	1	CS.	✓	FIRED 1 BTL DUE
		0341	BO				48° 32.94	126° 00.46		116					TO HIGH CHL MAX
		0345	EN				48° 32.95	126° 00.44							~14 @ 11.5m

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DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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Month Sept **Year** 2012 **Ship** J TULLY **Cruise ID** 2012-59

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Latitude	Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
3	LC06	0428	BE	ROS	US	46	48° 36.41	125° 54.05	92		162-169	8	CS	✓	-WENT TO 92m
		0432	BO				48° 36.41	125° 54.07		81					→ MAY HAVE HIT
		0439	EN				48° 36.43	125° 54.10							BOTTOM.
3	LC06	0446	BE	NET	—	47	48 36.45	125 54.08	91		—	—	MG.		
		0449	BO				36.45	54.08		81					
		0452	EN				36.45	54.08							
3	LC05	0536	BE	ROS	US	48	48 39.92	125 47.40	64		—	0	CS	✓	
		0538	BO				39.92	47.39		54					
		0539	EN				39.92	47.37							
3	LC05	0549	BE	NET	—	49	48° 39.95	125° 47.30	64		—	—	MG		
		0551	BO				39.94	47.29		54.					
		0553	EN				39.95	47.28							
3	LC04	0639	BE	ROS	US	50	48 43.36	125 40.94	166		171-180	10	CS	✓	
		0642	BO				43.35	40.93		156					
		0656	EN				43.35	40.83							
3	LC03	0740	BE	ROS	—	51	48 46.95	125 34.30	136		—	0	SR	✓	
		0743	BO				46.95	34.31		128					
		0745	EN				46.96	34.31							

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Month Sept **Year** 2012 **Ship** Tully **Cruise ID** 2012-59

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
3	LC02	0812	BE	ROS	US	52	48 48.69	125 30.89	111		182-190	9	SR	✓	
		0815	BO				48.69	30.90		102					
		0824	EN				48.70	30.93							
3	LC01	0859	BE	ROS		53	48 50.44	125 27.73			191-204				
		0903	BO				50.45	27.73							
		0914	EN				50.44	27.70							
3	LD01	1040	BE	ROS	US	54	49 0.06	125 43.87	37		205-208	4	SR	✓	
		1042	BO				0.07	43.87		28					
		1045	EN				0.06	43.86							
3	LD02	1121	BE	ROS	US	55	48 58.34	125 47.03	45		209-215	7	SR	✓	
		1123	BO				58.34	47.03		37					
		1130	EN				58.34	47.02							
3	LD02	1155	BO	NET		56	48 58.24	125 47.54	44	40			SR		Bongo
3	LD03	1222	BE	ROS		57	48 56.44	125 50.61	47		—	—	SR	✓	
		1223	BO				56.43	50.60		38					
		1224	EN				56.43	50.59							
3	LD04	1305	BE	ROS	US	58	48 53.17	125 57.06	64		216-221	—	SR	✓	
		1307	BO				53.18	57.08							
		1316	EN				53.19	57.10							

Cast Type:
BOT = Bottle cast, no CTD
CTD = CTD without Rosette
ROS = Rosette plus CTD
SET = Fish Set
USW = Sea Water Loop
MOR = Mooring
NET = Plankton Net Haul
DRF = Drifter
____ = ____

Bottle Firing Method:
US = Up / Stop
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DN = Down / No stop

Time Code:
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EN = End Time of Cast
DE = Deployment Time
MR = Messenger Release Time
RE = Recover Mooring Time

Transmissometer to be cleaned before each cast, do not use Ammonia products

Notes: ____

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month Sept	Year 2012	Ship Tully	Cruise ID 2012-59

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
3	LD05	1421	BE	ROS	✓	59	48 49.23	126 3.70	89		—	—	SR	✓	
		1423	BO				49.84	3.70							
		1424	EN				49.83	3.71							
3	LD06	1510	BE	ROS	US	60	48 46.17	126 10.14	136		222-230		SR	✓	
		1513	BO				46.17	10.14		126					
		1523	EN				46.17	10.12							
3	LD07	1606	BE	ROS		61	48 42.64	126 16.68	454		—	—	SR	✓	
		1615	BO		✓		42.64	16.68		446					
		1620	EN				42.63	16.68							
3	LD08	1705	BE	ROS	US	62	48 39.13	126 23.36	773		231-248	—	SR	✓	fired bot 8 @
		1718	BO				39.11	23.36		768					200 m by accident
		1751	EN				39.10	23.36							
3	LD09		BE	ROS	—	63	48 35.	126 30.	1052		—	—	SR/MG	✓	
		1857	BO				48 35.67	126 29.97		1055					
		1916	EN				48 35.66	126 30.01							
3	LD09	1925	BE	NET		64	48° 35.68	126 30.00	1054	~~250~~			MG		
		1938	Bo				48° 35.68	126° 30.01		250					
		1943	EN				48° 35.67	126 30.01							

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Notes: ________________________________

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Month SEPTEMBRE **Year** 2012 **Ship** TULLY **Cruise ID** 2012-59

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information: Latitude	Positional Information: Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
3	LD10	2029	BE	ROS	—	65	48 32.16	126 36.53	1476				MR	✓	PAR OFF
		2055	BO				48 32.16	126 36.54		1475	—	Ø			(-0.32→-0.64) P on deck before: -0.4
		2121	EN				48 32.14	126 36.50							P on deck after: -1.4
3	LD11	2204	BE	NET	—	66	48 28.80	126 42.91	1590				MG		
		2216	BO				48 28.89	126 42.91		250					265 out, 202
		2221	EN				48 28.90	126 42.89							
3	LD11	2229	BE	ROS	US	67	48 28.93	126 42.86	~1600				MR	✓	
		2300	BO				48 28.91	126 42.92		1608	249-269	21			
		2344	EN				48 28.93	126 42.99							
4	LG09	0410	BE	ROS	US	68	4851.137	127°19.637	2060		270-277	8	CS	✓	
		0446	BO				4851.134	127°19.696		2074					
		0524	EN				4851.137	127°19.830							
4	LG09	0536	BE	NET	—	69	48 51.13	127°19.90	2060		—	—	MG	—	
		0547	BO				51.16	19.97		250					
		0552	EN				51.17	20.02							
4	LC08	0652	BE	ROS	—	70	48°55.24	127°13.336	2005		—	~~8~~	CS	✓	
		0723	BO				55.24	13.36		2057					
		0756	EN				55.26	13.27							

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Notes: ______________________________

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month Sept **Year** 2012 **Ship** Tully **Cruise ID** 2012-59

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
4	LG07	0852	BE	ROS	—	71	48 59.41	127 7.12	1762		—	—	SR	✓	
		0919	BO				59.39	7.10							
		0943	EN				59.44	7.03							
4	LG06	1035	BE	ROS	US	72	49 3.53	127 1.06	921		278-294	17	SR	—	Touched the
		1052	BO				3.57	1.03		921					bottom
		1129	EN				3.68	0.99							
4	LG05	1218	BE	ROS		73	49 7.33	126 55.20	276		—	—	SR	✓	
		1222	BO				7.34	55.21							
		1227	EN				7.32	55.21							
4	LG04	1309	BE	ROS	US	74	49 11.20	126 49.39	145		295-304	9	SR		
		1312	BO				11.19	49.38							
		1324	EN				11.22	49.40							
4	LG04	1336	BO	NET		75	49 11.19	126 49.40	135						
4	LG03	1435	BE	ROS		76	49 15.02	126 43.76	118		—	—	SR	✓	
		1437	BO				15.06	43.77		112					
		1440	EN				15.06	43.77							
4	LG02	1527	BE	ROS	US	77	49 18.68	126 38.29	99		305-318		SR	✓	
		1530					18.69	38.31		92					
		1539					18.69	38.34							

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DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month Sept | **Year** 2012 | **Ship** Tully | **Cruise ID** 2012-59

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information: Latitude	Positional Information: Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
4	LG01	1618	BE	ROS	US	78	49 20.28	126 35.01							
		1620	BO				20.28	35.03							
		1625	EN				20.26	35.05							
4	LBP8	2311	BE	ROS	US	79	49 48.61	128 16.79	2075		325-330	6	MR	✓	UVK cast w/ PAR
		2313	BO				49 48.60	128 16.78		100					wrong cr. # in header
		2316	EN				49 48.61	128 16.80							→
4	LBP8	2328	BE	NET	UN	80	49 48.620	128 16.77	2075		—	—	MG		MULTNET
5		0034	BO				48.64	16.86		2056					
		0108	EN				48.66	16.81							
5	LBP8	0117	BE	ROS	US	81	49 48.642	128 16.824	2073		—	—	CS	✓	PAR OFF
		0153	BO				49 48.654	128 16.825							
		0227	EN				49°48.660	128°16.870							
5	LBP7	0311	BE	NET	—	82	49°52.382	128°11.099	2180		—	—	MG	✓	
		0320	BO				49°52.371	128°11.141		250					
		0324	EN				49°52.368	128°11.192							
5	LBP7	0337	BE	ROS	US	83/	49°52.38	128°11.19	2185		331-350	20	CS	✓	Upcast is
		0413	BO			84	49°52.346	128°11.288		2175					event 84.
		0518	EN				49°52.328	128°11.372							

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Notes: ____________

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✓

Computer (Sea-save) purge @ start of cast

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month Sept **Year** 2012 **Ship** Tully **Page** 14 **of** ____ **Cruise ID** 2012-59

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
5	LBP6	0605	BE	ROS	—	85	49 56.137	128 05.520	805		—	6	CS	✓	
		0620	BO				49 56.150	128 05.566		795					
		0633	EN				49 56.120	128 05.644							
5	LBP5	0719	BE	ROS	US	86	49 59.98	128 0.22	1290		352-371	20	SR	✓	
		0738	BO				59.92	0.23		1282					
		0818	EN				59.92	0.16							
5	LBP5	0837	BO	NET		87	49 59.91	128 00.13	1285	250			SR		Bongo
5	LBP4	0917	BE	ROS	[illegible]	88	50 1.32	127 58.03	1052		—				
		0934	BO				1.40	127 57.97							
		0952	EN				1.34	57.92							
5	LBP3	1010	BE	ROS	US	89	50 3.15	127 55.26	168		372-382	11	SR	✓	
		1015	BO				3.18	55.31		158					
		1027	EN				3.24	55.36							
5	LBP3	1036	BO	NET		90	50 3.25	127 55.36	164	160	3				Bongo
5	LBP2	1110	BE	ROS		91	50 4.11	127 54.36	97		383-388		SR	✓	
		1111	BO				4.11	54.36		87					
		1114	EN				4.12	54.36							
5	LBP2	1058	BO	NET		92	50 4.05	127 54.26	96	90					Bongo

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Notes: ____________________

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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Month Sept	Year 2012	Ship Tully	Cruise ID 2012-59

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
5	LBP1	1136	BE	ROS		93	50 4.81	127 52.78	52		—	—	SR	✓	
		1138	BO				4.82	52.82		47					
		1139	EN				4.82	52.82							
5	CPE2	1648	BE	ROS		94	50 43.04	128 39.84	124		—	—	SR	✓	
		1650	BO				43.03	39.84		116					
		1652	EN				43.02	39.84							
5	CPE2	1706	BO	NET		95	50 43.02	128 39.93	123	115			SR		Bongo
5	LQ03	1849	BE	ROS	US	96	50°39.767	129°02.044	1300		—	—	CJ	✓	
		1910	BO				50°39.79	129°02.10		1310					
		1932	EN				50°39.85	129°02.10							
5	LQ03	1940	BE	NET		97	50°39.83	129°02.05	1287				MG		Bongo
		1951	BO				50°39.83	129°02.03		250					
		1957	EN				50°39.82	129°02.04							
5	J122	2123	BE	ROS	—	98	50°39.89	129°17.26	1380?				MR	✓	
		2147	BO				50°39.88	129°17.19		1355	—	∅			
		2209	EN				50°39.89	129°17.19							
5	J122	2218	BE	NET		99	50°39.91	129°17.17	1330				MG		Bongo
		2228	BO				50 39.92	129° 17.17		250					
		2232	EN				50 39.90	129° 17.21							

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DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month Sept	Year 2012	Ship Tully	Cruise ID 2012-59

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
6	CS00	0154	BE	NET	UN	100	50 27.622	129°55.~~036~~	2178		—	—	MG		MULTINET
		0251	BO				27.62	55.04		2005					
		0324	EN				27.62	55.04							
6	CS00	0329	BE	NET	—	101	50 27.62	129 55.04	2178		—	—	MG		Bongo
		0341	BO				27.62	55.04		250					
		0347	EN				27.62	55.04							
6	CS00	0355	BE	ROS	US	102	50 27.62	129 55.04	2177		389-408	20	CO	✓	Went to 95m,
		0433	BO				50°27.61	129°55.19		2035					then to sfc +
		0522	EN				50 27.66	129° 55.29							back down →
6	CS01	0700	BE	ROS	—	103	50 34.71	129 41.75	2110		~~410-429~~	~~20~~	SR		
		0735	BO				34.66	42.11		2103					
			EN				34.65	41.13							
6	CS02	1007	BE	ROS	—	104	50 41.27	129 27.93	1907		410-429	20	SR	✓	
		1036	BO				41.31	27.96		1900					
		1127	EN				41.33	27.91							
6	CS02	1040	BO	NET	·	105	50 41.34	129 27.87	1902	250	—	—	SR		Bongo
6	CS03	1254	BE	ROS	—	106	50 45.58	129 19.94	242		—	—	SR	✓	
		1259	BO				45.60	19.94							
		1303	EN				45.65	19.91							

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→ THOUGHT START OF CAST LOOKED STRANGE SO BROUGHT IT BACK TO SFC FROM 95m & STARTED AGAIN. JUST A WELL MIXED SFC LAYER... OOPS!

DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month Sept **Year** 2012 **Ship** Tully **Cruise ID** 2012-59

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information: Latitude	Positional Information: Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
6	CSØ3	1320	BO	NET		107	50 45.69	129 15.94	232	220			[illegible]		Bongo
6	CSØ4	1432	BE	ROS		108	50 49.17	129 12.96							
		1435	BO				49.17	12.98			430-436	7			
		1442	EN				49.16	13.03							
6	CSØ4	1505	BO	NET		109	50 49.25	129 13.09	95	85			SR		Bongo
6	ODAS	1818	BE	ROS	/	110	50 50.61	129 54.04	2100		—	—	SR	✓	
		1848	BO				50' 50.65	129' 54.04		2005			MR		
		1922	EN				50' 50.66	129' 54.13							
6	ODAS	1930	BE	NET		111	50' 50.65	129' 54.14	2100						
		1941	BO				50 50.65	129' 54.15		250					
		1946	EN				50' 50 66	129' 54.18							
6	CS3B	2201	BE	ROS		112	50' 59.97	129 26.99	220				MR	✓	UVic cast
		2205	BO				50' 59.99	129' 26.98		210	438-443	6			PAR ON
		2212	EN				50 59.99	129 26.96							
6	CS3B	2218	BE	NET		113	51' 00.06	129' 26.95	221				MG		Bongo
		2226	BO				51' 00.06	129' 26.96		210					
		2229	EN				51' 00.06	129' 26.95							

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Notes: ______________________________

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Month September | **Year** 2012 | **Ship** Tully | **Cruise ID** 2012-59

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Latitude	Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
7	CS05	00 37	BE	ROS	US	114	50°55.78	129°00.26	65		—	/	CS	✓	
		00 38	BO				55.78	00.26		55					
		00 39	EN				55.78	00.27							
7	CS05	00 46	BE	NET	—	115	50°55.77	129°00.28	65		—	/	MG		
		00 50	BO				°55.78	°00.27		60					
		00 51	EN				°55.77	°00.28							
7	CS1B	02 21	BE	ROS	US	116	50°53.04	128°40.19	74		—	/	CS	✓	
		02 23	BO				53.04	40.18		64					
		02 24	EN				53.04	40.19							
7	CS1B	0231	BE	NET	—	117	50°53.04	128°40.18	74		—	—	MG		
		0234	BO				53.05	40.18		70					
		0236	EN				53.07	40.18							
7	CS06	0403	BE	NET	—	118	50°59.92	128°51.87	64		—	—	MG		
		0407	BO				59.92	51.89		65 (wire out)					
		0408	EN				59.92	51.90							
7	CS06	0416	BE	ROS	—	119	50°59.92	128°51.93	64		444-449	6	CS	✓	
		0417	BO				59.91	51.93		57					
		0423	EN				59.90	51.95							

Cast Type:
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DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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Month	Sept	Year	2012	Ship	Tully	Cruise ID	2012-59

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Positional Information Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans, Cleaned	Comments
7	CS07	0521	BE	ROS	U.S	120	51° 04.35	128° 44.19	65		—	/	CJ	✓	
		0523	BO				51° 04.35	128° 44.20		55					
		0524	EN				51° 04.36	128° 44.21							
7	CS07	0533	BE	NET	—	121	51° 04.37	128° 44.22	65		—	/	MG		
		0537	BO				04.39	44.26		55					
		0539	EN				04.40	44.26							
7	CS08	0639	BE	ROS	—	122	51° 08.47	128° 36.18	141		—	/	CJ		
		0642	BO				08.49	36.19		131					
		0645	EN				08.48	36.199							
7	CS08	0658	BE	NET	—	123	51° 08.51	128° 36.32	141		—	/	MG		
		0704	BO				08.54	36.34		130					
		0708	EN				08.55	36.46							
7	CS09	0804	BE	NET		124	51 12.47	128 28.01	193				SR		Bongo
		0814	BO				51 12.49	128 28.02		183					
		0819	EN				51° 12.50	128 28.05							
7	CS09	0827	BE	ROS		125	51 12.58	128 28.18	193		451-462		SR	✓	
		0831	BO				12.58	28.21							
		0847	EN				12.75	28.35							

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DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

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7	CS10	0939	BE	NET		126	51 16.51	128 19.93	80		—	—	SR		Bongo VNH
		0943	BO				16.55	19.92		70			+ SR		
		0944	EN				16.55	19.91							
7	CS10	0952	BE	ROS		127	51 16.57	128 19.84							
		0954	BO				16.58	19.82							
		0955	EN				16.58	19.81							
7	UBC7	1328	BE	NET		128	51 29.86	127 49.13	146		—	—	SR		Bongo VNH
		1334	BO				51 29.85	127 49.06		136					
		1338	EN				29.84	49.02							
7	UBC7	1344	BE	ROS	US	129	51 29.81	127 49.01	152		463-465	3	SR	✓	
		1347	BO				29.80	49.01							
		1352	EN				29.77	49.00							
7	Ri1	1454	BE	NET		130	51 26.45	127 38.48	304				SR		Bongo
		1504	BO				26.48	38.51		295					
		1509	EN				26.49	38.57							
7	Ri1	1520	BE	ROS		131	51 26.60	127 37.98	326		466-468		SR	✓	
		1526	BO				26.58	37.98							
		1533	EN				26.59	38.01							

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Month Sept	Year 2012	Ship Tully	Cruise ID 2012-59

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Positional Information Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
7	Ri2	1623	BE	NET		132	51 31.24	127 33.70	332				SR		Bongo
		1634	BO				31.29	33.74		320					
		1640	EN				31.31	33.72							
7	Ri2	1657	BE	ROS	US	133	51 31.27	127 33.53	332		469-471		SR	✓	
		1702	BO				31.30	33.52		324					
		1709	EN				31.31	33.47							
7	Ri3	1744	BE	NET		134	51 35.88	127 32.08	326						Bongo
		1756	Bo				35.90	32.10							
		1802	EN				35.90	32.10							
7	RI3	1809	BE	ROS	US	135	51 35.91	127 32.09	326		472-474	3	SR	✓	
		1815	Bo				35.92	32.09							
		1823	EN				35.94	32.12							
7	Ri3	1907	BE	NET		136	51° 35.91	127° 31.90	325		—	/	MG		Multinet
		1917	Bo				35.91	31.88		300					
		1923	EN				35.94	31.88							
7	Ri4	2013	BE	NET		137	51° 38.88	127° 26.84	300				MG		
		2020	BO				51° 38.88	127° 26.85		290					
		2024	EN				51° 38.87	127° 26.84							

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Month SEPTEMBRE **Year** 2012 **Ship** TULLY **Cruise ID** 2012-59

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
7	Ri4	2032	BE	ROS	US	138	51'38.86	127'26.85	300					✓	
		2037	BO				51 38.86	127 26.85		290	475-477	3	MR		
		2045	EN				51'38.86	127'26.83							
7	Ri5	2129	BE	NET	—	139	51 40.59	127 19.84	203				MG		
		2135	BO				51 40.62	127 19 87		191					
		2139	EN				51 40.66	127 19 88							
7	Ri5	2146	BE	ROS	US	140	51 40.70	127'19 92	202				MR	✓	
		2150	BO				51 40 69	127'19.91		195	478-480	3			
		2157	EN				51 40.66	127 19.90							
7	Ri6	2221	BE	NET	—	141	51°40.48	127°16.94	144		—	/	MG		
		2225	BO				51°40 46	127°16.94		133					
		2228	EN				51°40 46	127°16.93							
7	Ri6	2235	BE	ROS	US	142	51°40.46	127°16.93	143		481-483	3	CS	✓	
		2238	BO				51°40.46	127°16.94		133					
		2242	EN				51°40.46	127°16.95							
8	SS7	0142	BE	ROS	US	143	51°24 62	127°47.57	124		—	/	CS	✓	-took 2 bottles for
		0144	BO				° 24.62	47.59		114					Dave @ 114m
		0147	EN				° 24.61	47.62							

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DAILY SCIENCE LOG

Ocean Sciences Division, Institute of Ocean Sciences

Month September | **Year** 2012 | **Ship** JP Tully | **Cruise ID** 2012-59

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Positional Information Latitude	Positional Information Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
8	SS6	0255	BE	ROS	US	144	51° 20.04	128° 00.05	180		—	/	CDJH	✓	
		0259	BO				20.03	00.07		170					
		0302	EN				20.02	00.09							
8	SS6	0308	BE	NET	—	145	51° 20 03	128° 00 12	180		—	/	MG		BONGO.
		0314	BO				20 02	00.11		169					
		0317	EN				20 03	00.11							
8	SS5	0536	BE	ROS	US	146	51 27.97	128 30.05	200		—	/	CL		
		0539	BO				51° 27.93	128° 30.06		190					
		0542	EN				51° 27.90	128° 30.09							
8	SS4	0755	BE	NET		147	51 21.02	129 0.06	239				SR		
		0803	BO				21.11	0.07		229					
		0808	EN				21.10	0.06							
8	SS4	0816	BE	ROS		148	51 21.07	129 0.07	239				SR	✓	
		0819	BO				21.10	0.07		232					
		0823	EN				21.11	0.09							
8	SS3	1019	BE	ROS		149	51 15.01	129 21.31	290				SR	✓	
		1024	BO				15.05	21.27		284					
		1029	EN				15.06	21.23							

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Month Sept | **Year** 2012 | **Ship** Tully | **Cruise ID** 2012-59

Day	Station Name	Time (UTC)	Time Code	Cast Type	Firing Method	Event Number	Latitude	Longitude	Bottom Depth	Max Depth	Sample Numbers	# of Bottles	Watch Keepers	Trans. Cleaned	Comments
8	SS2	1202	BE	NET		150	51 13.00	129 42.98	581						Bongo
		1212	BO				13.02	42.96		250					
		1216	EN				13.03	42.96							
8	SS2	1223	BE	ROS		151	51 13.12	129 42.99	558				SR	X	
		1232	BO				13.14	43.02		555					
		1242	EN				13.18	43.01							
9	SS1	1354	BE	ROS		152	51 11.93	129 59.92	492				SR	✓	
		1401	BO				11.94	59.87							
		1409	EN				11.94	59.79							
8	CPE1	2245	BE	ROS	—	153	51°00 13	127°50.10	145		—	/	CA	✓	
		2247	BO				51°00 15	127°50.11		135					
		2250	EN				51°00 14	127°50 10.							
8	CPE1	2257	BE	NET	—	154	51°0010	127° 50.15	145		—	/	MG		
		2303	BO				51°00.13	127° 50.14		133					
		2305	EN				51°00 15	127° 50.14							
9	CPE2	1911	BE	ROS	✓	155	49°28.00	124°30.12	330				MR	✓	
		1917	BO				49°28.00	124°30.11		320	—	Ø			
		1922	EN				49 27.98	124°30.12							

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9	CPF2	1927	BE	NET		156	49°27.991	124°30.121	327		—	/	CS		MPS
		1937	BO				49°27.971	124°30.111	328	328					
		1943	EN				49°27.98	124°30.10							
9	CPF1	2148	BE	ROS	—	157	49°22.148	124°04.963	250		—	/	CS	✓	
		2152	BO				49°22.168	124°04.949		240					
		2157	EN				49°22.163	124°04.956							
9	CPF1	2206	BE	NET	—	158	49°22.143	124°04.942	250		—	/	MG		MPS
		22:14	BO				49°22.105	124°04.903		242					
		22:19	EN				49°22.114	124°04.890							
10	GEO1	0042	BE	NET	—	159	49°15.044	123°45.083	403		—	/	MG		MPS
		0054	BO				49°15.020	123°45.074		395					
		0100	EN				49°15.025	123°45.069							
10	GEO1	0107	BE	ROS	—	160	49°15.026	123°45.064	403		—	/	CS	✓	
		0114	BO				49°15.026	123°45.043		393					
		0121	EN				49°15.067	123°45.002							

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