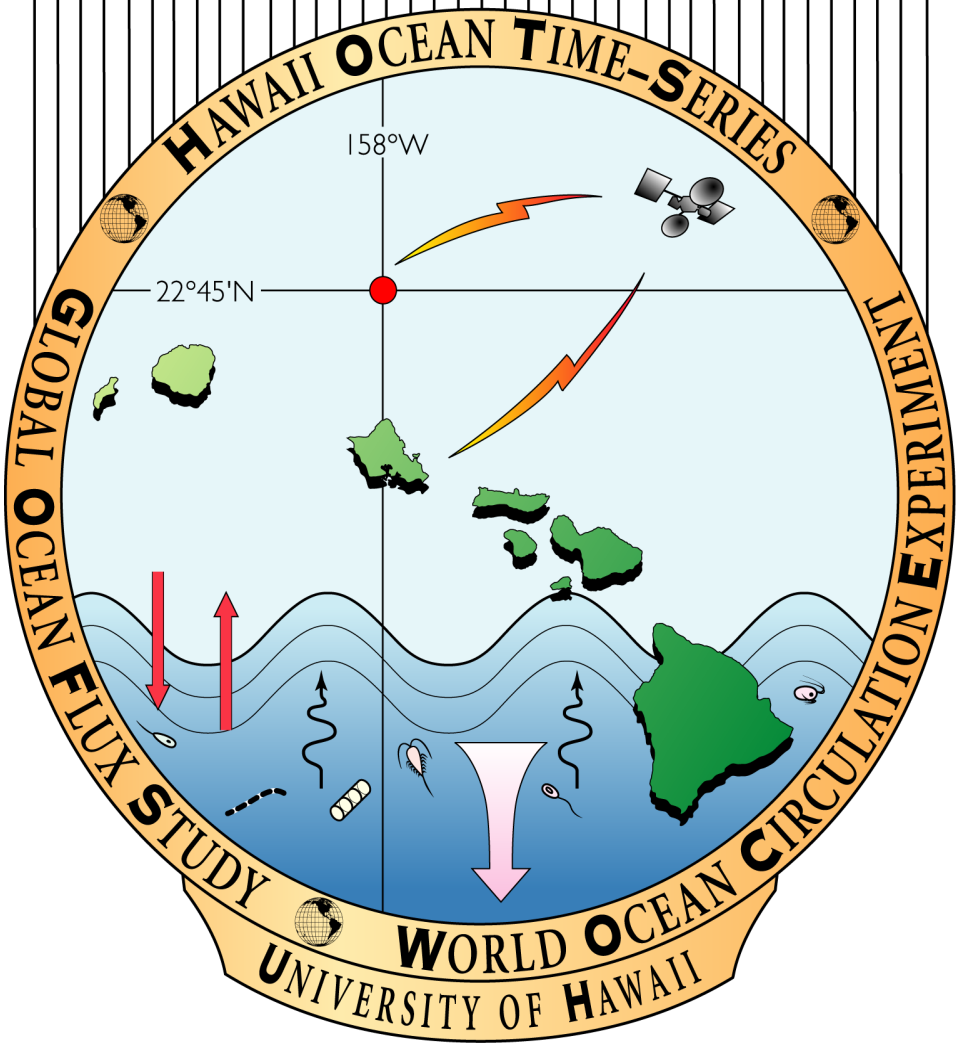
Hawaii Ocean Time-series Program

HOT-194



Hawaiian Ocean Time-Series

HOT-**194**

KAHE Station Data Sheet

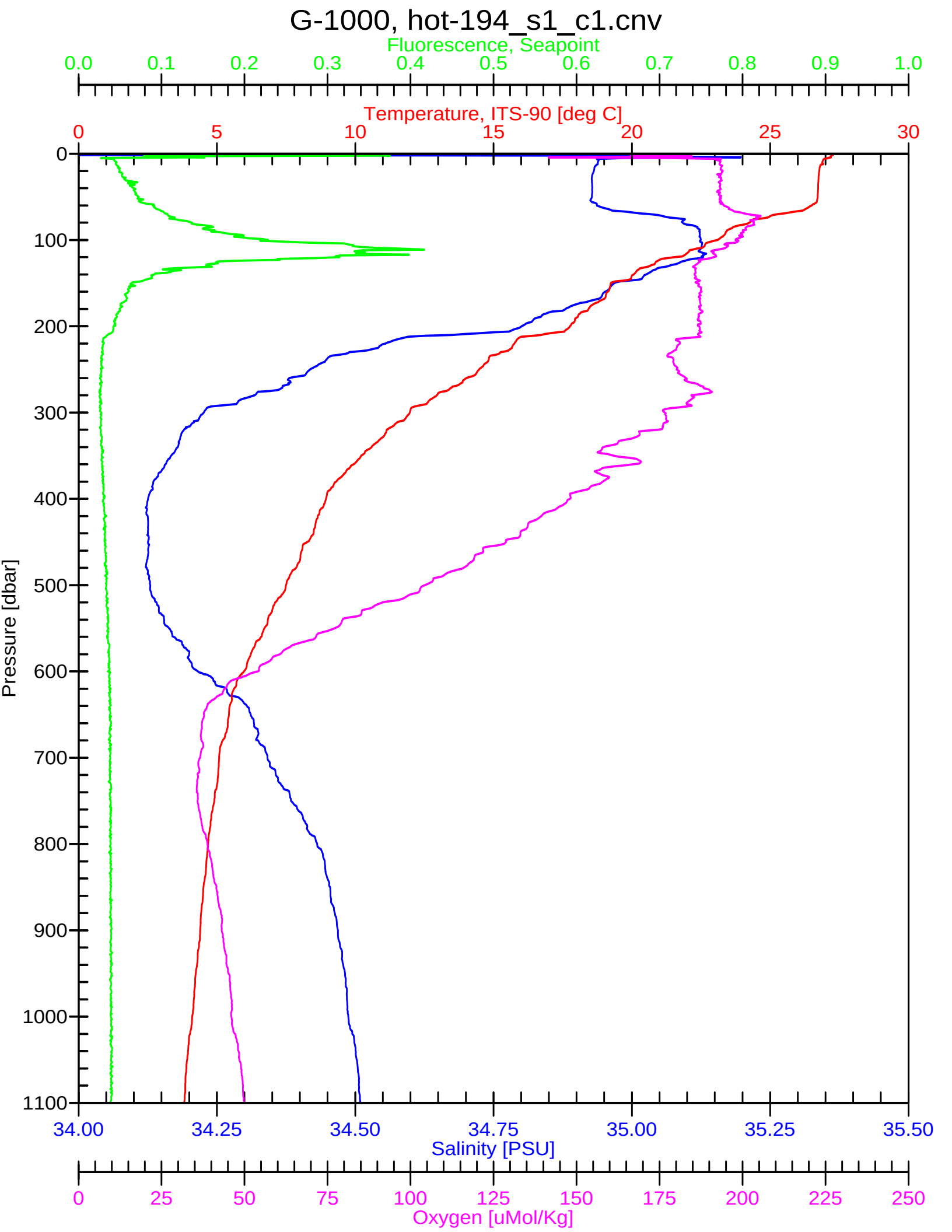
Station # 1 Date: 8/2/07 (HST)

Cast # 1 Time: 1315 (HST)

Operator(s): TC, SC, LF, BU

Rosette Position	Desired Depth	Oxygen	Sample Temp.	Nuts	DIC/ Alk	pH	DOC	LLN/ LLP	Chl *a*	FCM
1	**1000**	1	7.5	1						
2	**900**	2	8.2	2						
3	**800**	3	9.0	3						
4	**750**	4,5,6	9.3	4A-B						
5	**700**	7	9.1	5						
6	**600**	8	9.3	6						
7	**500**	9	10.7	7			7			
8	**400**	10	12.1	8						
9	**350**	11	13.7	9A-B			9			
10	**300**	12	14.7	10						
11	**250**	13	16.6	11						
12	**225**	14	17.7	12						
13	**200**	15	19.3	13			13			
14	**175**	16	20.0	14			14		14	14A-B
15	**150**	17	20.7	15			15	15	15	15A-B
16	**125**	18	22.7	16A-B			16		16	16A-B
17	**115**	19	22.8	17						
18	**100**	**20,21 ,22**	23.4	18			18	18	18A-B	18A-B
19	**75**	23	26.1	19			19		19	19A-B
20	**60**	24	26.5	20						
21	**45**	25	26.7	21	21	8	21	21	21	21A-B
22	**25**	26	26.8	22	22	2	22		22A-B	22A-B
23	**5**	27	27.0	23	23	3,4,5	23	23	23	23A-B
24	**5**	QC	27.1							

Notes:


G-1000, hot-194_s1_c1.cnv
Fluorescence, Seapoint
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
Temperature, ITS-90 [deg C]
0
5
10
15
20
25
30
Pressure [dbar]
0
100
200
300
400
500
600
700
800
900
1000
1100
34.00
34.25
34.50
34.75
35.00
35.25
35.50
Salinity [PSU]
0
25
50
75
100
125
150
175
200
225
250
Oxygen [uMol/Kg]

Hawaiian Ocean Time-series

HOT- **194**

Gas Array Experiment Data Sheet

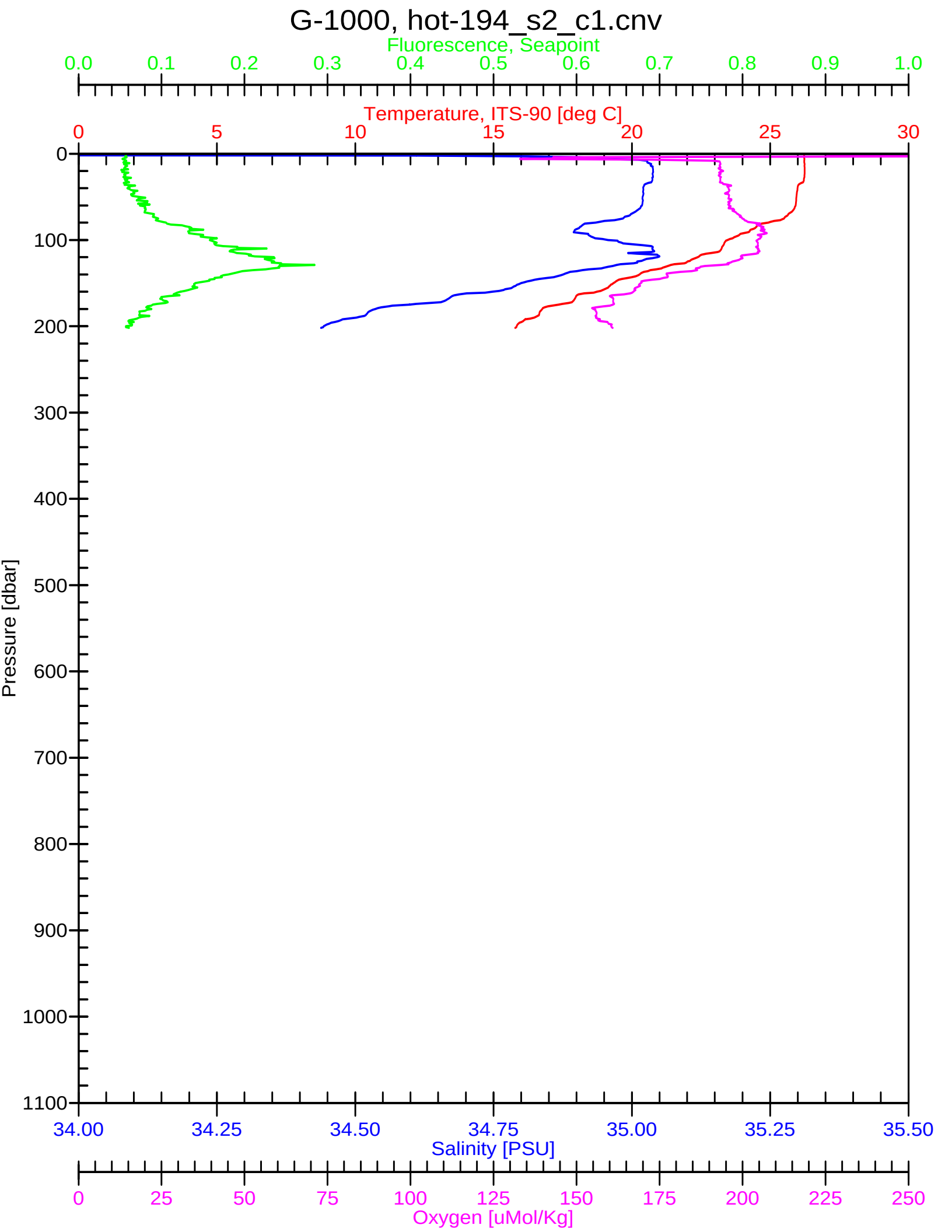
Station # 2 Date: 08-03-07 (HST)

Cast # 1 Time: 0141 (HST)

Operator(s): SC,TC

Rosette Position	Desired Depth	DV	15N2				
1	**45**		X				
2	**45**		X				
3	**45**		X				
4	**45**		X				
5	**45**	X					
6	**25**		X				
7	**25**		X				
8	**25**		X				
9	**25**		X				
10	**5**		X				
11	**5**		X				
12	**5**		X				
13	**5**		X				
14	**5**	X					
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							

Notes:


G-1000, hot-194_s2_c1.cnv
Fluorescence, Seapoint
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
Temperature, ITS-90 [deg C]
0
5
10
15
20
25
30
Pressure [dbar]
0
100
200
300
400
500
600
700
800
900
1000
1100
34.00
34.25
34.50
34.75
35.00
35.25
35.50
Salinity [PSU]
0
25
50
75
100
125
150
175
200
225
250
Oxygen [uMol/Kg]

Hawaiian Ocean Time-series

HOT- **194**

Gas Array Experiment Data Sheet

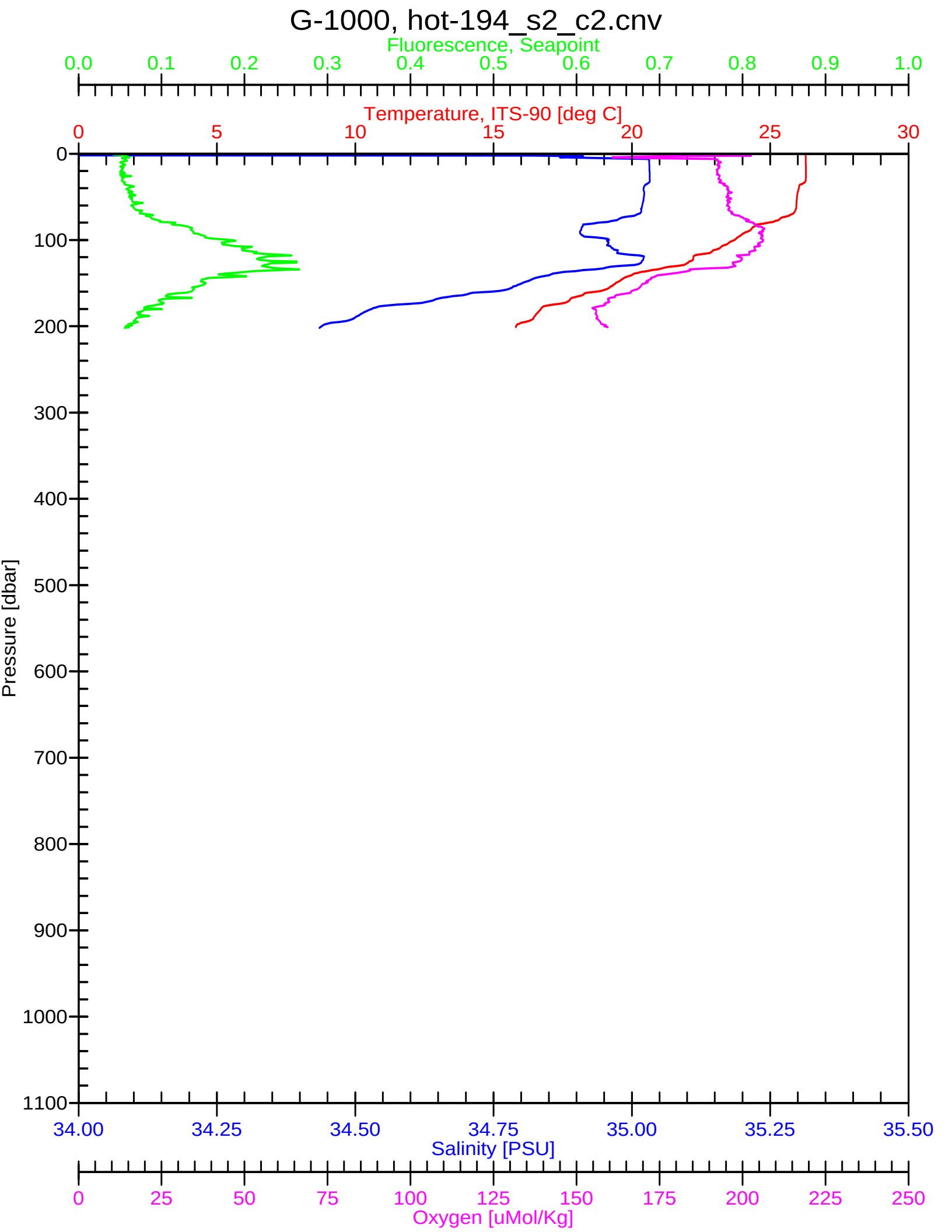
Station # 2 Date: 08-03-07 (HST)

Cast # 2 Time: 0315 (HST)

Operator(s): SC, TC

Rosette Position	Desired Depth		15N2	MR			
1	**125**		X				
2	**125**		X				
3	**125**		X				
4	**125**		X				
5	**100**		X				
6	**100**		X				
7	**100**		X				
8	**100**		X				
9	**75**		X				
10	**75**		X				
11	**75**		X				
12	**75**		X				
13	**45**			X			
14	**45**			X			
15	**45**			X			
16	**45**			X			
17	**45**			X			
18	**45**			X			
19	**45**			X			
20	**45**			X			
21							
22							
23							
24							

Notes:


G-1000, hot-194_s2_c2.cnv
Fluorescence, Seapoint
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
Temperature, ITS-90 [deg C]
0
5
10
15
20
25
30
Pressure [dbar]
0
100
200
300
400
500
600
700
800
900
1000
1100
34.00
34.25
34.50
34.75
35.00
35.25
35.50
Salinity [PSU]
0
25
50
75
100
125
150
175
200
225
250
Oxygen [uMol/Kg]

Hawaiian Ocean Time-series

HOT-**194**

WOCE Deep Data Sheet

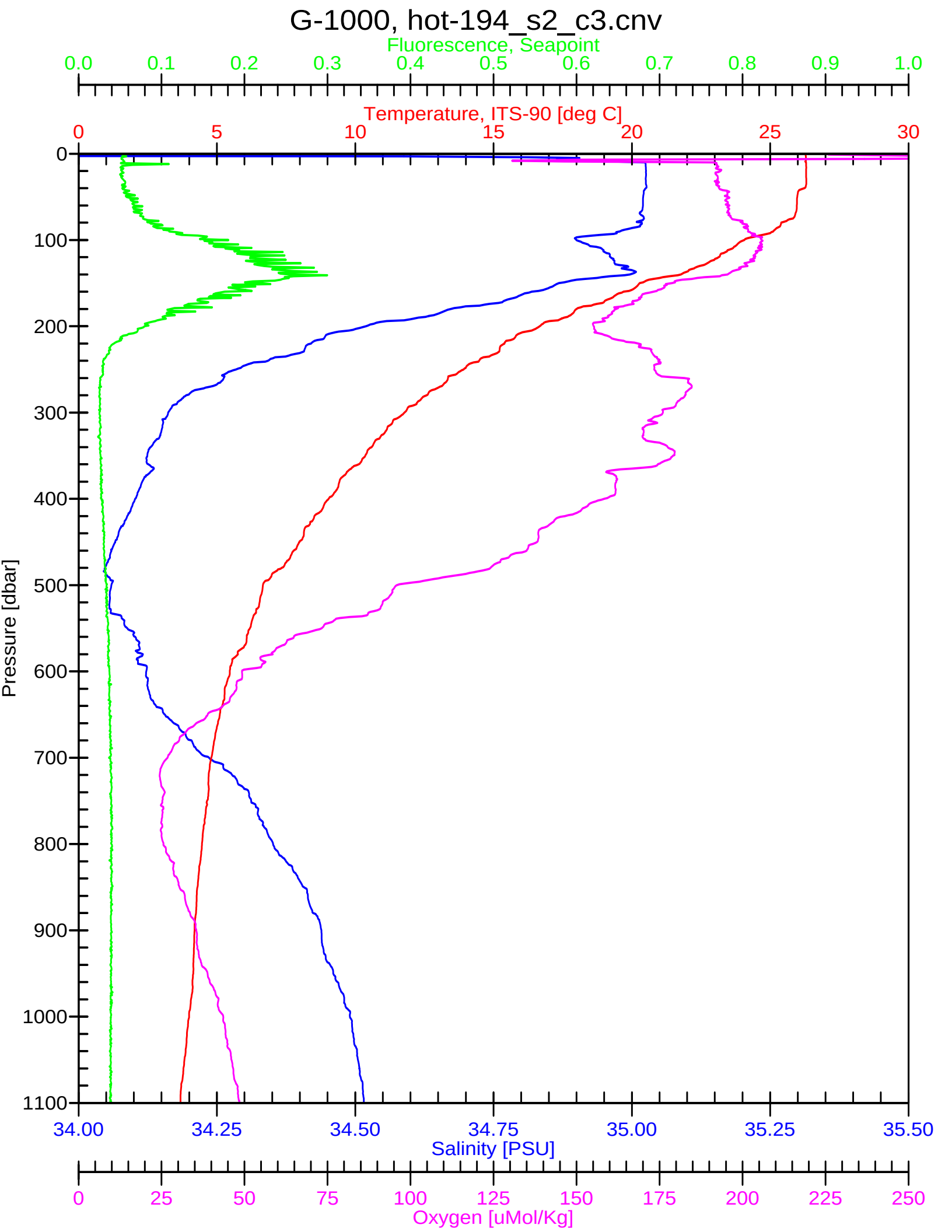
Station # 2 Date: 8-3-07 (HST)

Cast # 3 Time: 0505 (HST)

Operator(s): Ah,lf,ds,bu

Rosette Position	Desired Depth	Oxygen	Sample Temp.	Nutrient	Refridg. Si	DOC	DIC/ Alk	pH	
1	**4800**	28	4.3	1	1				
2	**4600**	29	4.3	2	2				
3	**4500**	30,31, 32	4.7	3A-B	3A-B	3A-B	3A-B	3A-B-C	
4	**4400**	33	4.5	4	4				
5	**4200**	34	4.4	5	5				
6	**4000**	35,36, 37	4.6	6A-B	6A-B	6A-B			
7	**3800**	38	4.6	7	7				
8	**3600**	39	4.5	8	8				
9	**3400**	40	4.5	9	9				
10	**3200**	41	4.6	10	10				
11	**3000**	42,43 44	4.8	11A-B	11A-B	11A-B	11	11	
12	**2800**	45	4.8	12	12				
13	**2600**	46	4.8	13	13				
14	**2400**	47	5.5	14	14				
15	**2200**	48	5.6	15	15				
16	**2000**	49,50, 51	5.6	16A-B	16A-B	16A-B	16	16	
17	**1800**	150	5.4	17	17				
18	**1600**	53	5.6	18	18				
19	**1400**	54	5.8	19	19				
20	**1200**	55	6.3	20	20				
21	**1000**	56	6.8	21					
22	**750**	57	7.3	22					
23	**500**	58	9.1	23					
24	**5**	59	26.0	24					

Notes:


G-1000, hot-194_s2_c3.cnv
Fluorescence, Seapoint
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
Temperature, ITS-90 [deg C]
0
5
10
15
20
25
30
Pressure [dbar]
0
100
200
300
400
500
600
700
800
900
1000
1100
34.00
34.25
34.50
34.75
35.00
35.25
35.50
Salinity [PSU]
0
25
50
75
100
125
150
175
200
225
250
Oxygen [uMol/Kg]

Hawaiian Ocean Time-series

HOT-**194**

PO Shallow Data Sheet

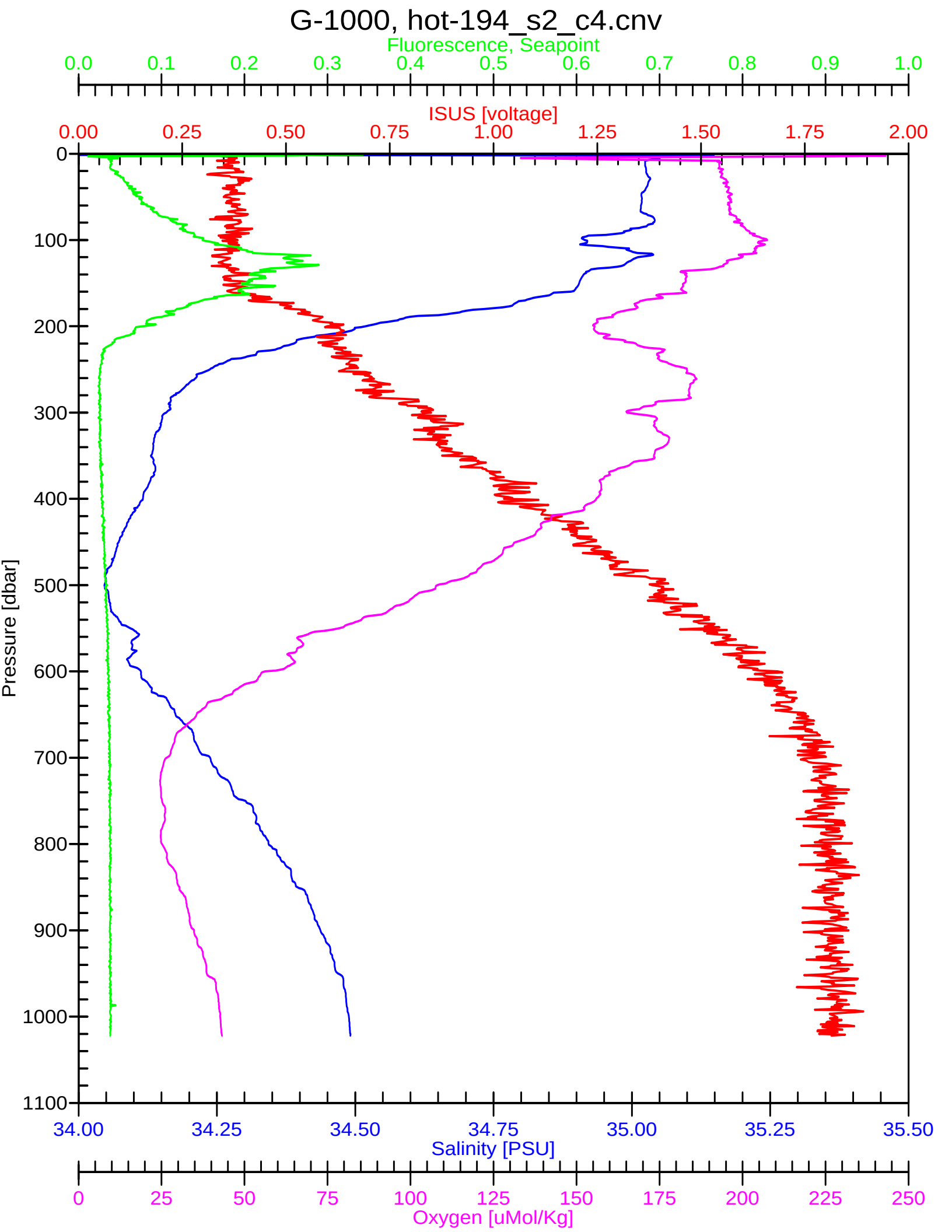
Station # 2 Date: 8/3/07 (HST)

Cast # 4 Time: 11:30 (HST)

Operator(s): Ah,lf,ds,bu

Rosette Position	Desired Depth	Oxygen	Sample Temp.	Nutrient	Refridg. Si	DIC/ Alk	pH	DOC	Quay
1	**1000**	60,61, 62	7.5	1A-B	1A-B	1	1	1	1
2	**950**	63	7.3	2	2				
3	**900**	64	7.3	3	3				
4	**850**	65	7.3	4	4				
5	**800**	66	7.4	5	5				
6	**750**	67,68, 69	7.8	6	6	6	6	6	6
7	**700**	70	7.7	7	7				
8	**650**	71	7.8	8	8				
9	**600**	72	8.2	9	9	9	9	9	9
10	**550**	73	8.8	10	10				
11	**525**	74	9.2	11A-B	11A-B				
12	**500**	75	9.8	12	12	12	12	12	12
13	**450**	76,77, 78	10.8	13	13				
14	**400**	79	11.8	14	14				
15	**350**	80	12.1	15	15	15A-B	15A-B	15	15
16	**300**	81	13.7	16	16				
17	**250**	82	14.7	17	17	17	17	17	17
18	**225**	83,84, 85	16.4	18	18				
19	**200**	86	19.1	19	19				
20	**150**	87	21.8	20A-B					
21	**125**	88	23.8	21					
22	**100**	89	24.7	22					
23	**75**	90	25.7	23					
24	**5**	91	26.2	24					

Notes:


G-1000, hot-194_s2_c4.cnv
Fluorescence, Seapoint
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
ISUS [voltage]
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
Pressure [dbar]
0
100
200
300
400
500
600
700
800
900
1000
1100
34.00
34.25
34.50
34.75
35.00
35.25
35.50
Salinity [PSU]
0
25
50
75
100
125
150
175
200
225
250
Oxygen [uMol/Kg]

Hawaiian Ocean Time-series

HOT- 194

ATP Data Sheet

Station # 2 Date: 08-03-07 (HST)

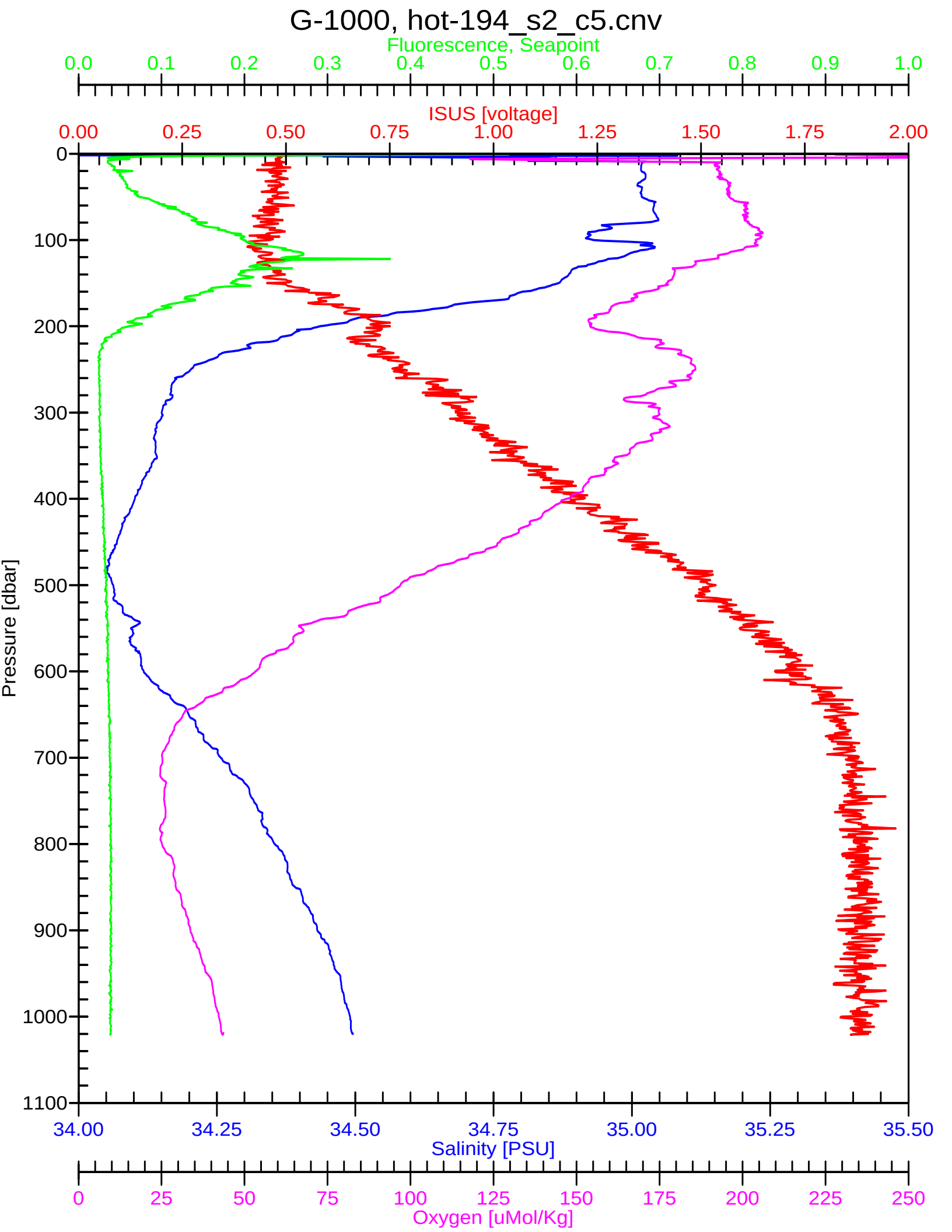
Cast # 5 Time: 1440 (HST)

Operator(s): SC, TC, DV Pre-screen mesh size: 202um

Blank #'s 28, 29, 30

Rosette Position	Desired Depth	ATP Tube #'s	Volume Filtered	Carboy #	Quay	MC	DV
1	**1000**						
2	**770**					X	
3	**Sal min**						
4	**500**					X	
5	**350**	1 - 3	3x2	1			
6	**300**				X		
7	**300**					X	
8	**250**	4 - 6	3x2	2			
9	**200**					X	
10	**200**				X		
11	**150**	7 - 9	3x1	7			
12	**150**				X		
13	**125**	10 - 12	3x1	8			
14	**125**				X		
15	**100**	13 - 15	3x1	9			
16	**100**				X		
17	**75**	16 - 18	3x1	10			
18	**45**	19 - 21	3x1	11			
19	**45**						X
20	**25**	22 - 24	3x1	12			
21	**5**	25 - 27	3x1	13			
22							
23							
24							

Notes:


G-1000, hot-194_s2_c5.cnv
Fluorescence, Seapoint
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0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
ISUS [voltage]
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
Pressure [dbar]
0
100
200
300
400
500
600
700
800
900
1000
1100
34.00
34.25
34.50
34.75
35.00
35.25
35.50
Salinity [PSU]
0
25
50
75
100
125
150
175
200
225
250
Oxygen [uMol/Kg]

Hawaiian Ocean Time-series

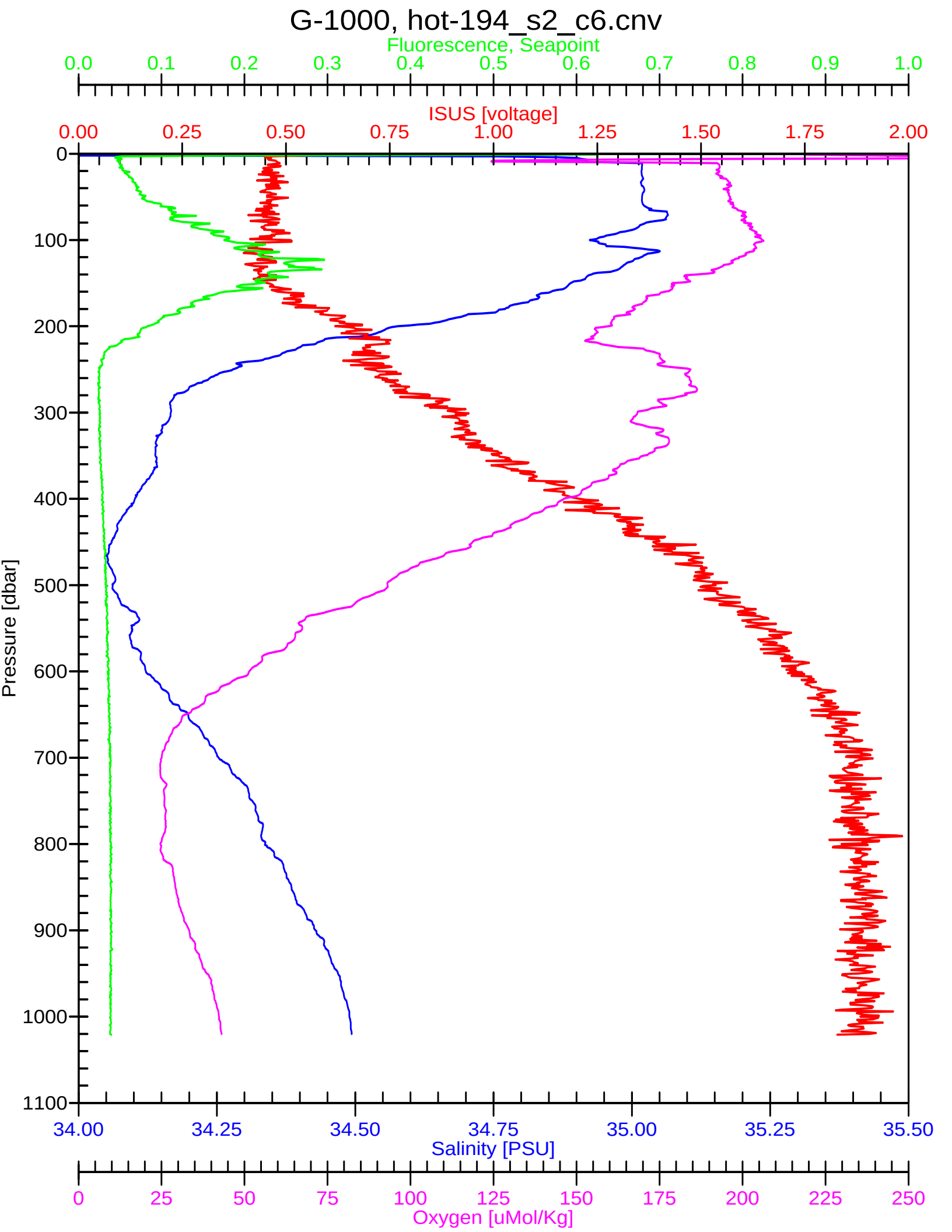
HOT-**194**

Phycoerythrin Data Sheet

Station #	2	Date:	08-03-07 (HST)
Cast #	6	Time:	1705 (HST)
Operator(s):	SC, TC, DV	Pre-screen mesh size:	None

Rosette Position	Desired Depth	Carboy #	Total Volume	10um	5um	.4um	MC	KB
1	**1000**							
2	**Sal min**							
3	**175**	1	10	1	2	3		
4	**175**						X	
5	**150**	2	10	4	5	6		
6	**150**						X	
7	**125**	3	10	7	8	9		
8	**125**						X	
9	**100**	4	10	10	11	12		
10	**100**						X	
11	**75**	5	10	13	14	15		
12	**75**						X	
13	**75**							X
14	**60**	6	10	16	17	18		
15	**45**	7	10	19	20	21		
16	**45**						X	
17	**45**							X
18	**35**	8	10	22	23	24		
19	**35**	9	10	25	26	27		
20	**25**	10	10	28	29	30		
21	**25**						X	X
22	**15**	11	10	31	32	33		
23	**5**	12	10	34	35	36		
24	**5**						X	X
Blanks				37	38	39		

Notes: #22, 34, 28 – Tricho puffs and tufts on filter
#10 – gelatinous ooze on filter
#6 – only 800mls filtered.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Fluorescence, Seapoint
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
ISUS [voltage]
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
Pressure [dbar]
0
100
200
300
400
500
600
700
800
900
1000
1100
34.00
34.25
34.50
34.75
35.00
35.25
35.50
Salinity [PSU]
0
25
50
75
100
125
150
175
200
225
250
Oxygen [uMol/Kg]

Hawaiian Ocean Time-series

HOT-**194**

HPLC & Chl *a*. Bottle Data Sheet

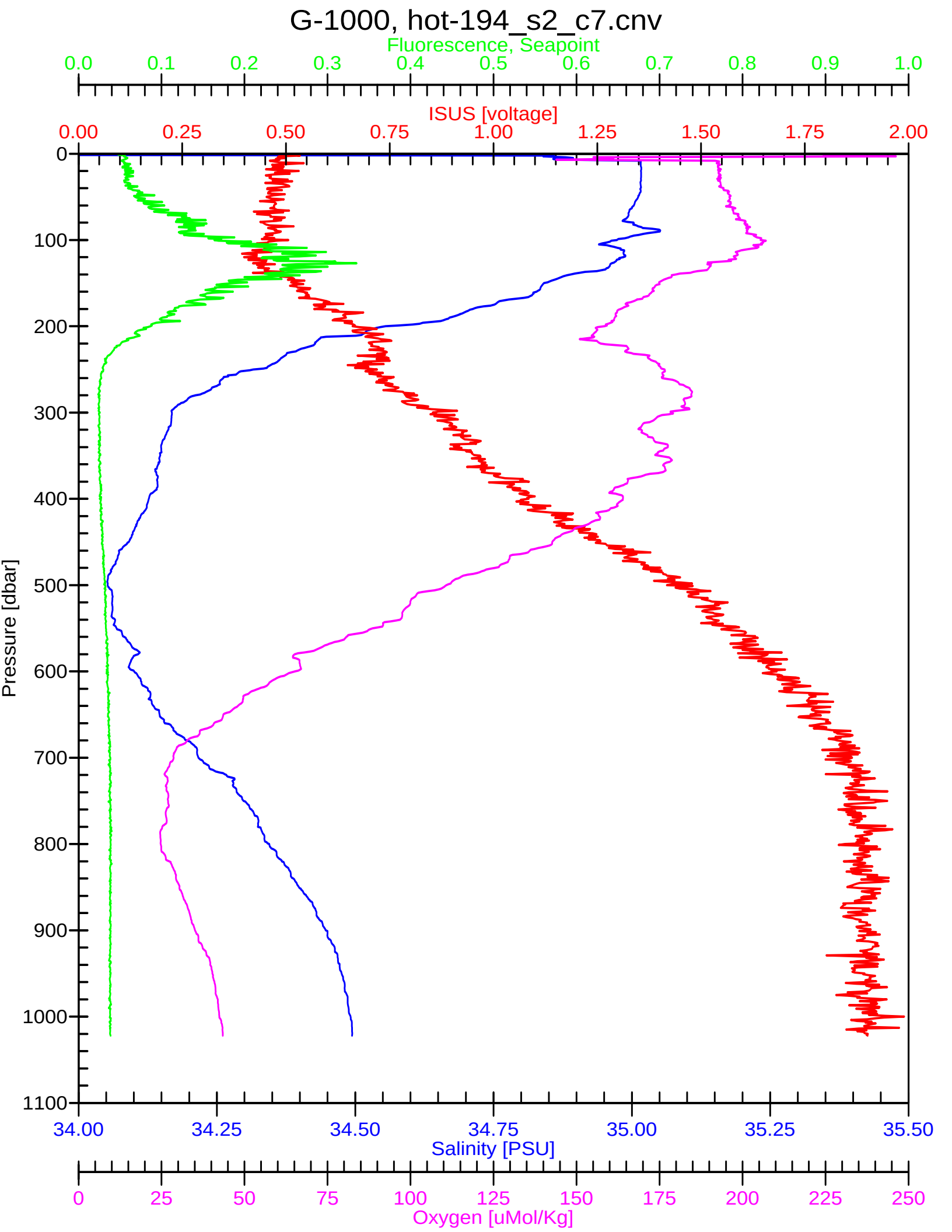
Station # 2 Date: 08-03-07 (HST)

Cast # 7 Time: 2000 (HST)

Operator(s): SC, TC, DV

Rosette Position	Desired Depth	Carboy #	Total Volume	HPLC	Chl *a*.	SLIDES	DV
1	**1000**						
2	**Sal min**						
3	**175**	1	10	3	3		
4	**175**					BW	
5	**150**	2	10	5	5		
6	**150**					BW	
7	**135**	7	4	7	7A-B		
8	**125**	8,9	4,4	8A-B	8		
9	**125**					BW	
10	**115**	10	4	10	10		
11	**100**	11	4	11	11		
12	**100**					BW	
13	**85**	12	4	13	13		
14	**75**	13	4	14	14		
15	**75**					BW	
16	**60**	14	4	16	16A-B		
17	**45**	15,16	4,4	17A-B	17		
18	**45**						X
19	**45**					BW	
20	**25**	3	10	20	20		
21	**25**					BW	
22	**5**	4	10	22	22		
23	**5**					BW	
24							

Notes: DO NOT PRE-SCREEN,


G-1000, hot-194_s2_c7.cnv
Fluorescence, Seapoint
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
ISUS [voltage]
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
Pressure [dbar]
0
100
200
300
400
500
600
700
800
900
1000
1100
34.00
34.25
34.50
34.75
35.00
35.25
35.50
Salinity [PSU]
0
25
50
75
100
125
150
175
200
225
250
Oxygen [uMol/Kg]

Hawaiian Ocean Time-series

HOT-**194**

BEACH Shallow Data Sheet

Station # 2 Date: 08-03-07 (HST)

Cast # 8 Time: 2300 (HST)

Operator(s): SC, TC, DV

Rosette Position	Desired Depth	Oxygen	Sample Temp.	Nutrient	Refridg. Si	DOC	LLN	LLP/ LLSi
1	**1000**	92	8.1					
2	**O_2 min**	93	8.6					
3	**Sal min**	94	10.5					
4	**200**	95	18.0	4	4	4		
5	**175**	96	19.6	5		5	5	5
6	**165**	97	20.1				6	
7	**150**	98	21.1	7		7	7A-B	7
8	**130**						8	
9	**125**	99	22.7	9A-B		9	9	9
10	**115**	100	22.9				10	10
11	**110**						11	
12	**100**	101,102, 103	24.3	12		12	12A-B	12
13	**90**						13	
14	**85**	104	24.8				14	14
15	**75**	105	25.4	15		15	15	15
16	**60**			16		16	16	16
17	**45**	106	25.8	17A-B		17	17	17
18	**35**			18		18	18	
19	**25**	107	26.1	19		19	19	19
20	**25**							
21	**15**			21		21	21	
22	**5**	108	26.4	22		22	22A-B	22
23	**5**							
24								

Notes:

Hawaiian Ocean Time-series

HOT-**194**

BEACH Carbon Data Sheet

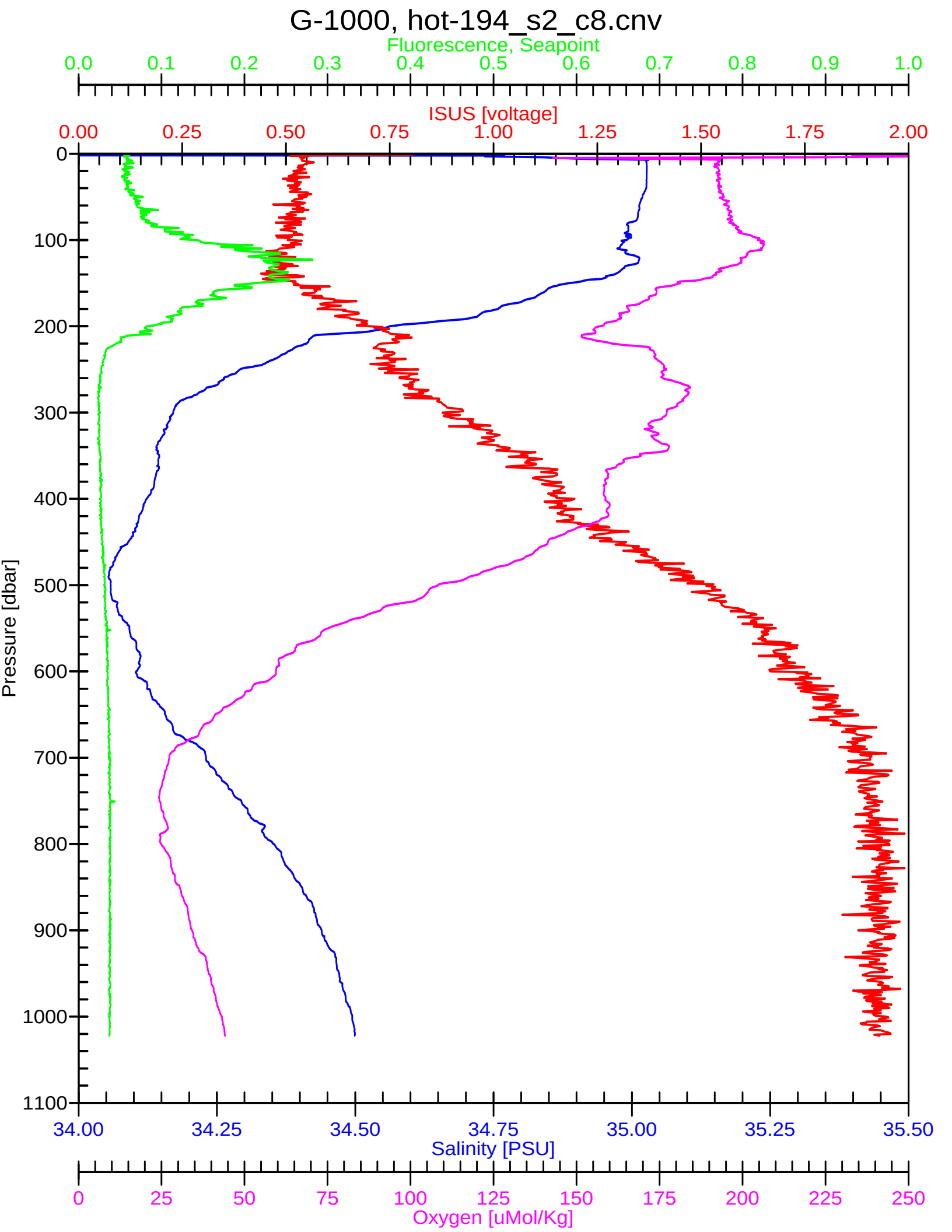
Station # 2 Date: 08-03-07 (HST)

Cast # 8 Time: 2300 (HST)

Operator(s): SC, TC, DV

Rosette Position	Desired Depth	DIC/ ALK	pH	Quay DIC	Keeling DIC			
1	**1000**							
2	**O_2 min**							
3	**Sal min**							
4	**200**	4	1	4				
5	**175**							
6	**165**							
7	**150**	7	2	7				
8	**130**							
9	**125**							
10	**115**							
11	**110**							
12	**100**	12		12				
13	**90**							
14	**85**							
15	**75**	15	3	15				
16	**60**							
17	**45**	17	4	17				
18	**35**							
19	**25**	19	5					
20	**25**			20	20A-B			
21	**15**							
22	**5**	22A-B	6					
23	**5**			23	23A-B			
24	**5**							

Notes: Keeling 20a – 0041; 20b – 0043
23a – 0045; 23b - 0047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Fluorescence, Seapoint
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
ISUS [voltage]
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
Pressure [dbar]
0
100
200
300
400
500
600
700
800
900
1000
1100
34.00
34.25
34.50
34.75
35.00
35.25
35.50
Salinity [PSU]
0
25
50
75
100
125
150
175
200
225
250
Oxygen [uMol/Kg]

Hawaiian Ocean Time-series

HOT-**194**

Primary Production Data Sheet

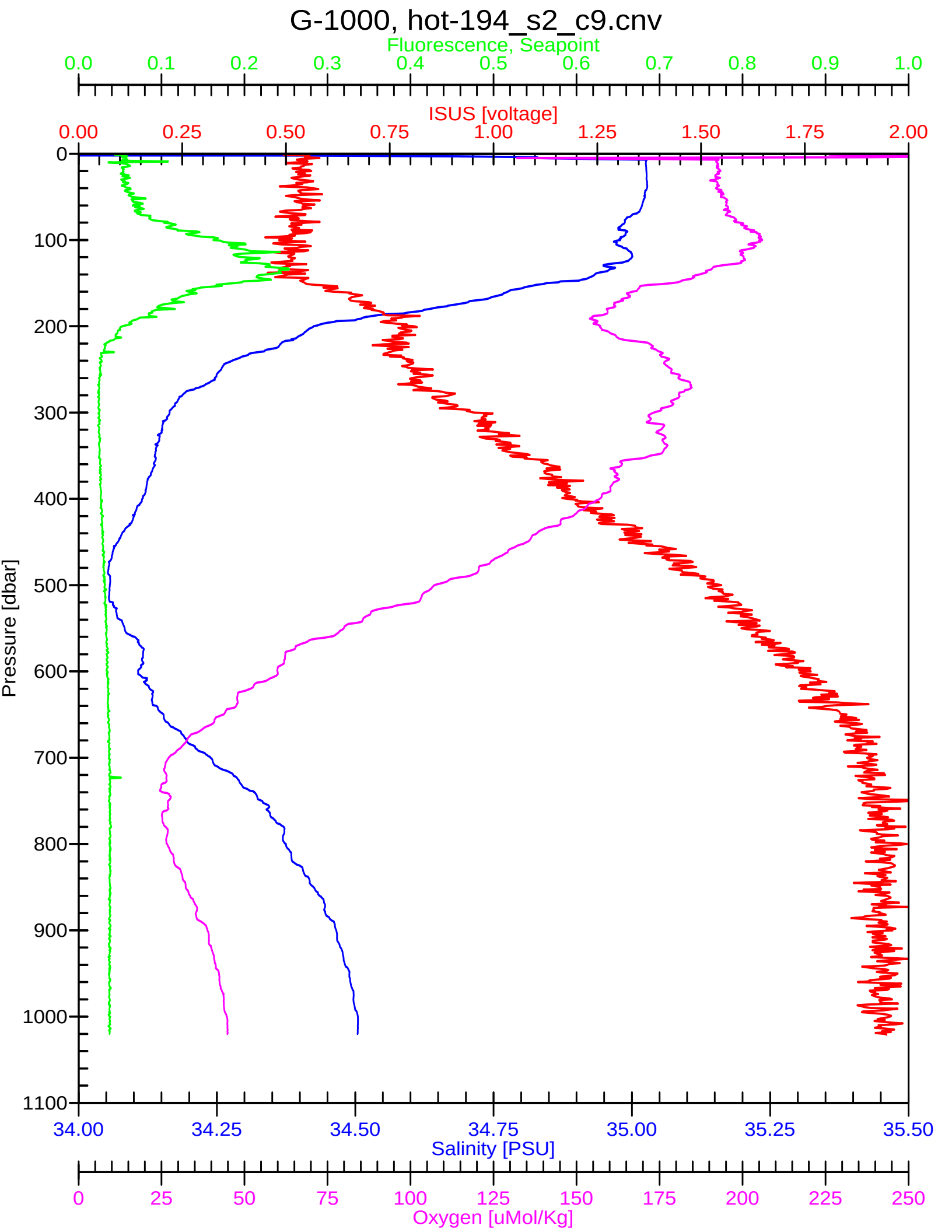
Station # 2 Date: 08-04-07 (HST)

Cast # 9 Time: 0200 (HST)

Operator(s): SC, TC, DV

Rosette Position	Desired Depth	Light Bottle	Chl *a*	FCM	**Size fractionated Chl a**	**Size fractionated 14C-PP**	
1	**1000**						
2	**Sal min**						
3	**175**		3A-B	3A-B	1		
4	**150**		4A-B	4A-B	2		
5	**125**	3-1	5	5	3	3T=0/3-4	
6	**125**	3-2	6	6		3-5	
7	**125**	3-3	7	7		3-6	
8	**100**	4-1	8	8	4	4T=0/4-4	
9	**100**	4-2	9	9		4-5	
10	**100**	4-3	10	10		4-6	
11	**75**	5-1	11	11	5	5T=0/5-4	
12	**75**	5-2	12	12		5-5	
13	**75**	5-3	13	13		5-6	
14	**45**	6-1	14	14	6	6T=0/6-4	
15	**45**	6-2	15	15		6-5	
16	**45**	6-3	16	16		6-6	
17	**25**	7-1	17	17	7	7T=0/7-4	
18	**25**	7-2	18	18		7-5	
19	**25**	7-3	19	19		7-6	
20	**5**	8-1	20	20	8	8T=0/8-4	
21	**5**	8-2	21	21		8-5	
22	**5**	8-3	22	22		8-6	
23							
24							

Notes:


G-1000, hot-194_s2_c9.cnv
Fluorescence, Seapoint
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
ISUS [voltage]
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
Pressure [dbar]
0
100
200
300
400
500
600
700
800
900
1000
1100
34.00
34.25
34.50
34.75
35.00
35.25
35.50
Salinity [PSU]
0
25
50
75
100
125
150
175
200
225
250
Oxygen [uMol/Kg]

Hawaiian Ocean Time-series

HOT- **194**

OPEN CAST Data Sheet

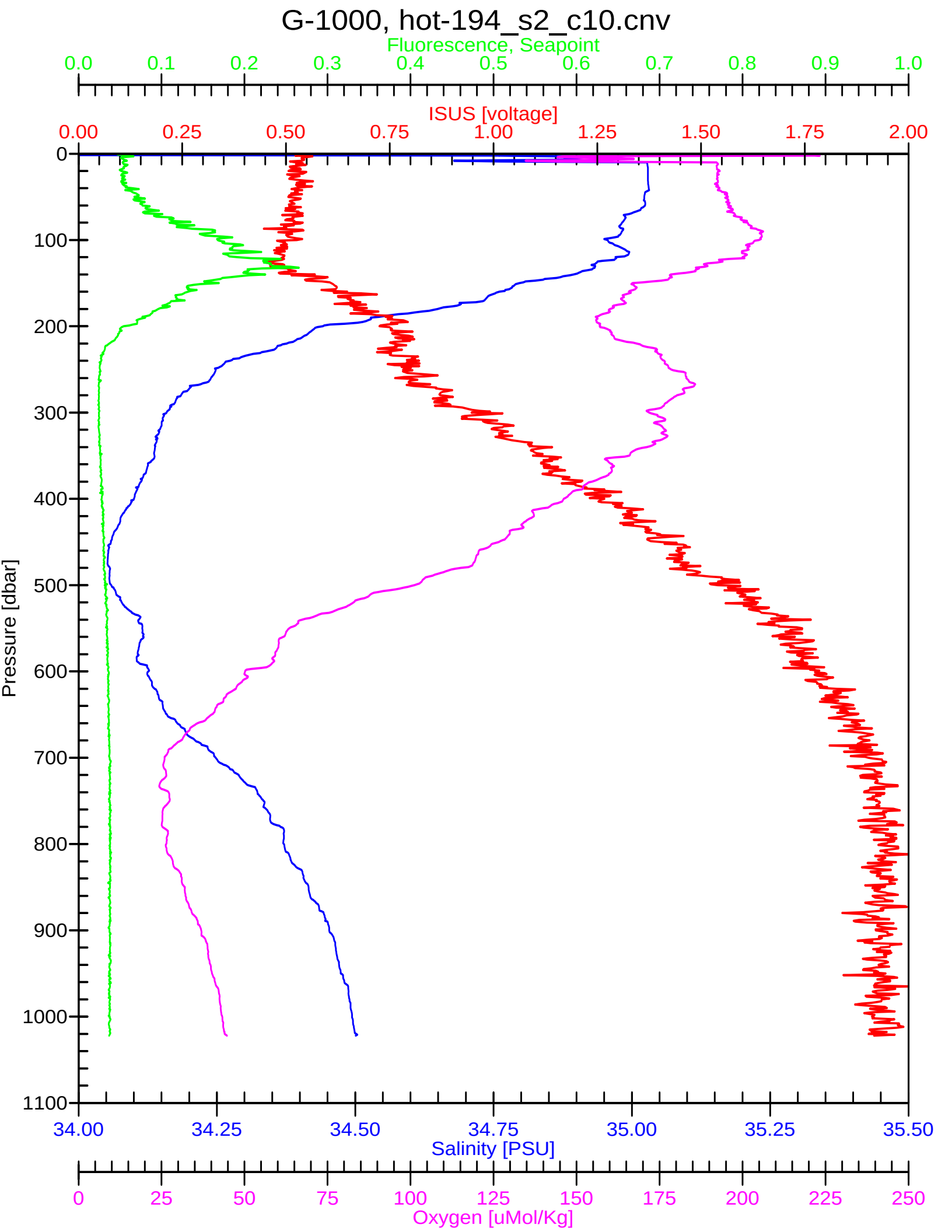
Station # 2 Date: 8/4/07 (HST)

Cast # 10 Time: 4:15 (HST)

Operator(s): Ah,ds,lf,bu

Rosette Position	Desired Depth	MR	PO	CMORE			
1	**1000**						
2	**1000**	X					
3	**1000**		X				
4	**1000**		X				
5	**1000**		X				
6	**1000**		X				
7	**1000**		X				
8	**800**	X					
9	**770**			X			
10	**770**			X			
11	**770**			X			
12	**770**			X			
13	**770**			X			
14	**600**	X					
15	**Sal min**						
16	**400**	X					
17	**200**	X					
18	**175**	X					
19	**150**	X					
20	**125**	X					
21	**100**	X					
22	**75**	X					
23	**45**	X					
24	**10**	X					

Notes:


G-1000, hot-194_s2_c10.cnv
Fluorescence, Seapoint
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
ISUS [voltage]
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
Pressure [dbar]
0
100
200
300
400
500
600
700
800
900
1000
1100
34.00
34.25
34.50
34.75
35.00
35.25
35.50
Salinity [PSU]
0
25
50
75
100
125
150
175
200
225
250
Oxygen [uMol/Kg]

Hawaiian Ocean Time-series

HOT- **194**

MIT Particulate Silica Data Sheet

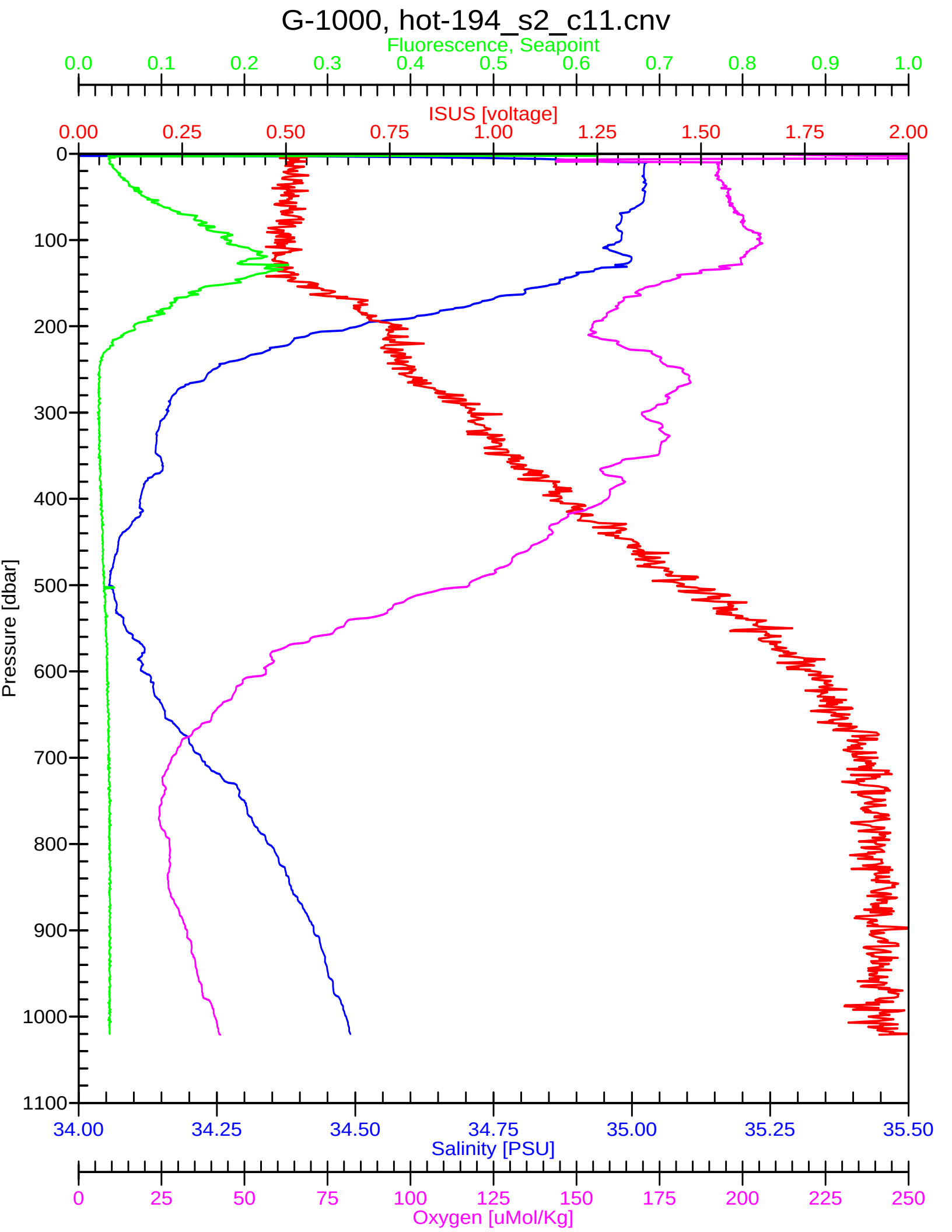
Station # 2 Date: 8/4/07 (HST)

Cast # 11 Time: 1200 (HST)

Operator(s): DS, LF, AH, BU

Rosette Position	Desired Depth	MIT	**Carboy #**	Total Volume	Sample #	MC	
1	**1000**						
2	**Sal Min**						
3	**250**	1					
4	**225**	2					
5	**200**	3					
6	**175**	4				X	
7	**175**		7	4	7		
8	**150**	5				X	
9	**150**		8	4	9		
10	**125**	6				X	
11	**125**		9,10	4,4	11A,B		
12	**115**	7					
13	**100**	8				X	
14	**100**		11	4	14		
15	**85**	9					
16	**75**	10				X	
17	**75**		12	4	17		
18	**60**	11					
19	**45**	12				X	
20	**45**		13	4	20		
21	**25**	13				X	
22	**25**		14,15	4,4	22A,B		
23	**5**	14				X	
24	**5**		16	4	24		

Notes:
Blank # B1, B2, B3


G-1000, hot-194_s2_c11.cnv
Fluorescence, Seapoint
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
ISUS [voltage]
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
Pressure [dbar]
0
100
200
300
400
500
600
700
800
900
1000
1100
34.00
34.25
34.50
34.75
35.00
35.25
35.50
Salinity [PSU]
0
25
50
75
100
125
150
175
200
225
250
Oxygen [uMol/Kg]

Hawaiian Ocean Time-series

HOT- **194**

PC/PN Data Sheet

Station # 2 Date: 08-04-07 (HST)

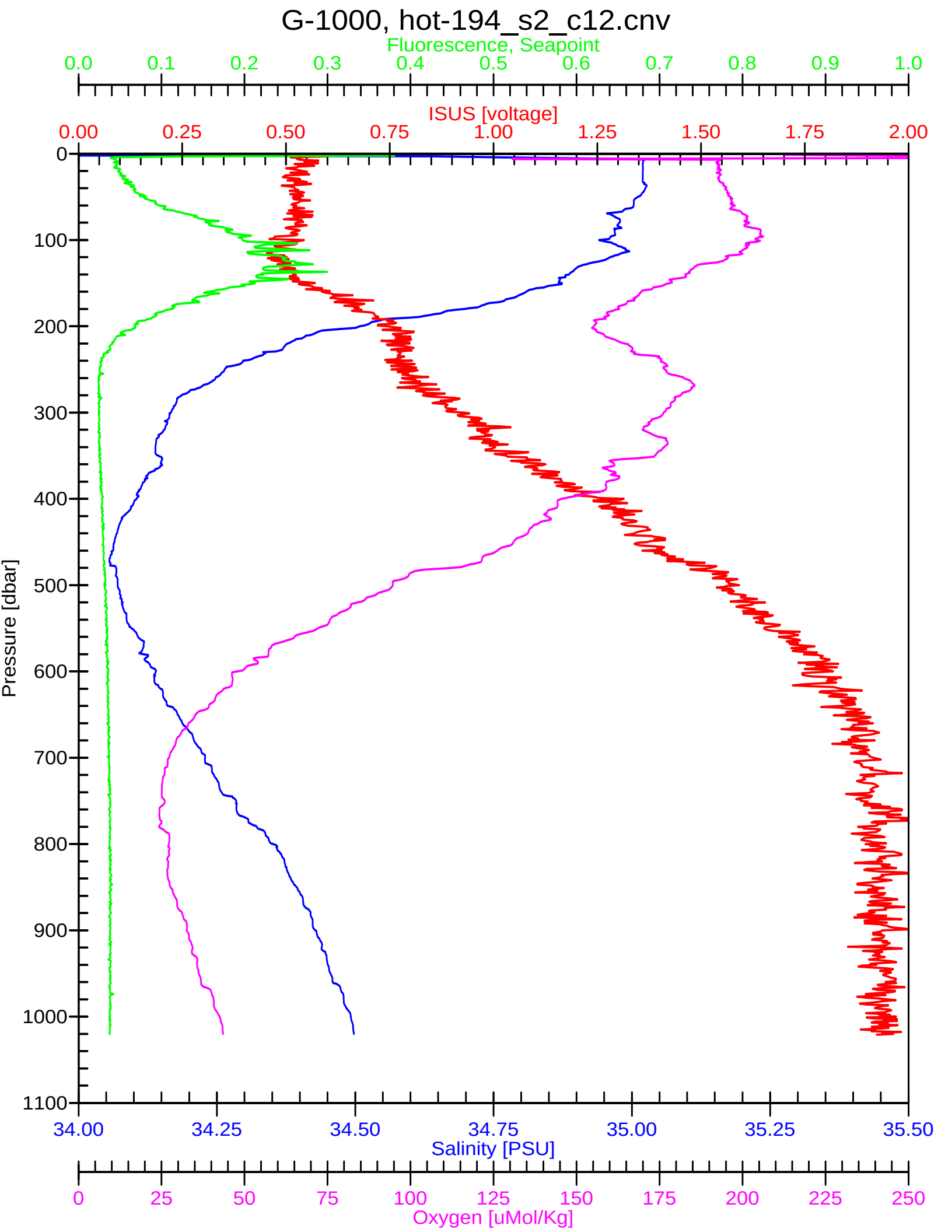
Cast # 13 Time: 1426 (HST)

Operator(s): SC, TC, DV Pre-screen mesh size: 202 um

Blank #'s **___B1___ ___B2___ ___B3___**

Rosette Position	Desired Depth	Carboy #	Total Volume	Sample #	**CMORE**		
1	**1000**						
2	**Sal min**						
3	**350**	1	10	3			
4	**350**	2	10	4			
5	**250**	3	10	5			
6	**200**	4	10	6			
7	**175**	5	10	7			
8	**150**	6	10	8			
9	**125**	7,8	4,4	9A-B			
10	**125**				X		
11	**125**				X		
12	**125**				X		
13	**125**				X		
14	**125**				X		
15	**100**	9	4	15			
16	**75**	10	4	16			
17	**75**				X		
18	**75**				X		
19	**75**				X		
20	**75**				X		
21	**75**				X		
22	**45**	11	4	22			
23	**25**	12,13	4,4	23A-B			
24	**5**	14	4	24			

Notes:


G-1000, hot-194_s2_c12.cnv
Fluorescence, Seapoint
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
ISUS [voltage]
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
Pressure [dbar]
0
100
200
300
400
500
600
700
800
900
1000
1100
34.00
34.25
34.50
34.75
35.00
35.25
35.50
Salinity [PSU]
0
25
50
75
100
125
150
175
200
225
250
Oxygen [uMol/Kg]

Hawaiian Ocean Time-series

HOT- **194**

Particulate Phosphorus Data Sheet

Station # 2 Date: 08-04-07 (HST)

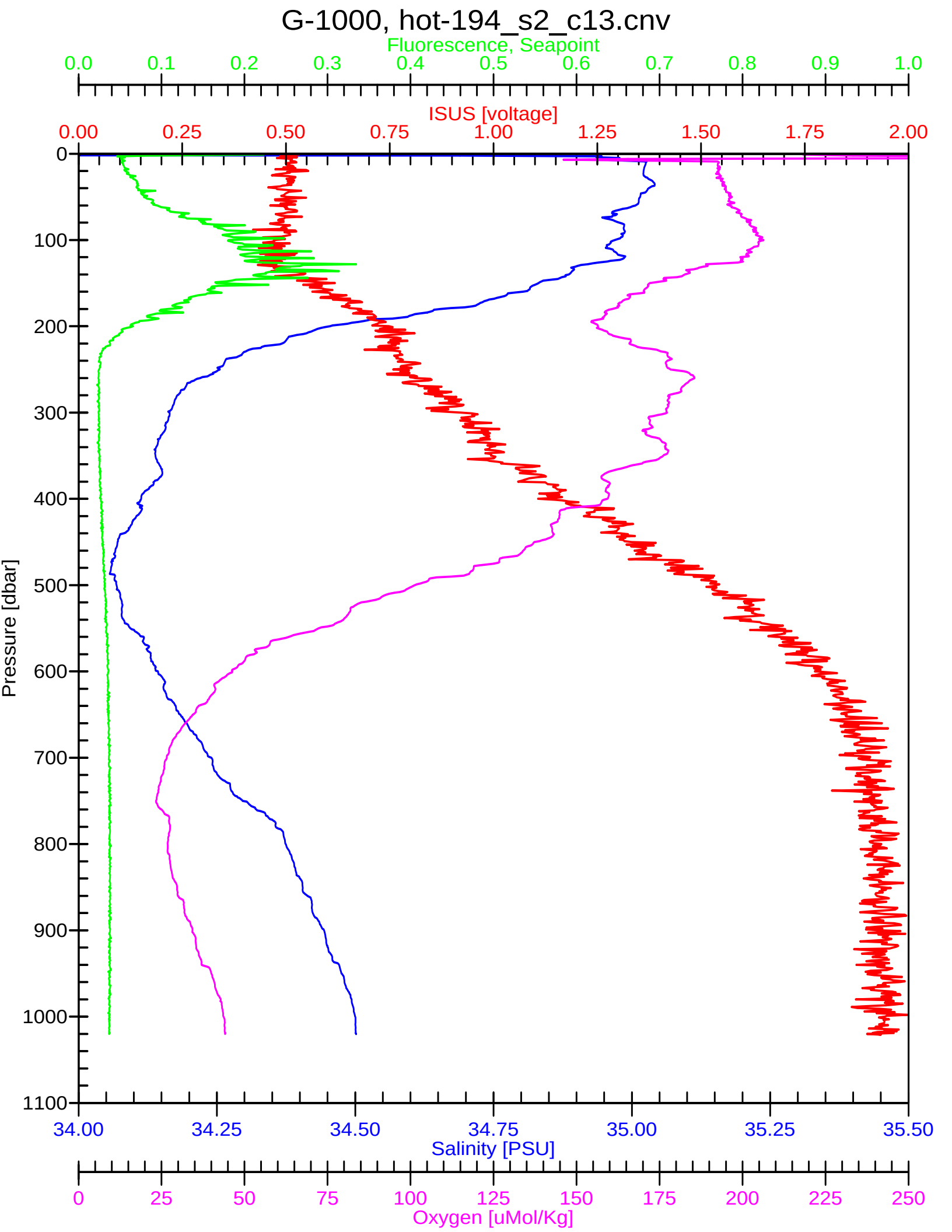
Cast # 13 Time: 1700 (HST)

Operator(s): SC, TC, DV Pre-screen mesh size: 202 um

Blank #'s **___B1___ ___B2___ ___B3___**

Rosette Position	Desired Depth	Carboy #	Total Volume	Sample #	CMORE		
1	**1000**						
2	**500**				X		
3	**500**				X		
4	**500**				X		
5	**500**				X		
6	**500**				X		
7	**Sal min**						
8	**350**	1	10	8			
9	**350**	2	10	9			
10	**250**	3	10	10			
11	**200**	4	10	11			
12	**175**	5	10	12			
13	**150**	6	10	13			
14	**125**	7,8	4,4	14A-B			
15	**100**	9	4	15			
16	**75**	10	4	16			
17	**45**	11	4	17			
18	**25**	12,13	4,4	18A-B			
19	**5**	14	4	19			
20							
21							
22							
23							
24							

Notes:


G-1000, hot-194_s2_c13.cnv
Fluorescence, Seapoint
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
ISUS [voltage]
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
Pressure [dbar]
0
100
200
300
400
500
600
700
800
900
1000
1100
34.00
34.25
34.50
34.75
35.00
35.25
35.50
Salinity [PSU]
0
25
50
75
100
125
150
175
200
225
250
Oxygen [uMol/Kg]

Hawaiian Ocean Time-series

HOT-**194**

PUR Data Sheet

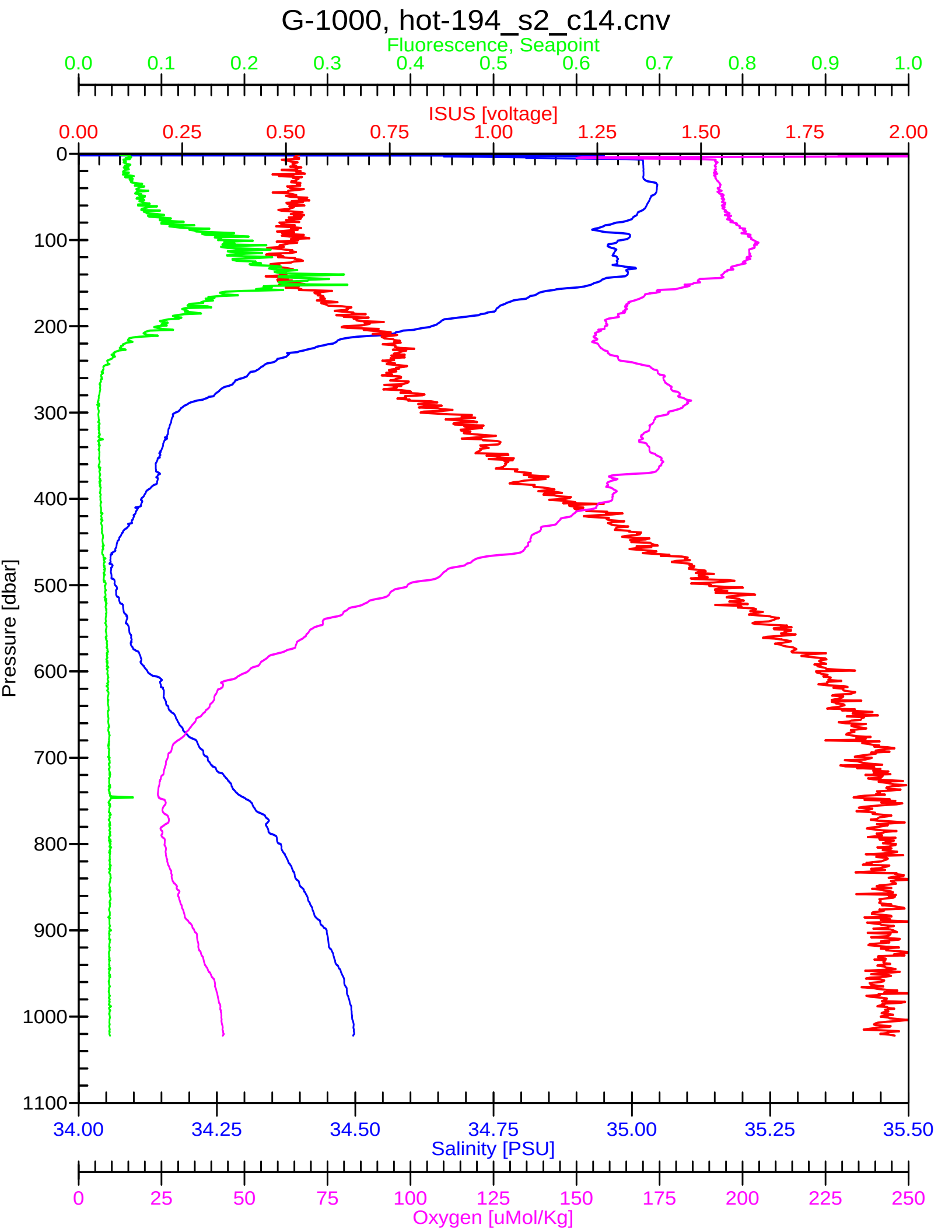
Station # 2 Date: 08-04-07 (HST)

Cast # 14 Time: 2000 (HST)

Operator(s): SC, TC, DV

Rosette Position	Desired Depth	Carboy #	Total Volume	PUR	CMORE			
1	**1000**							
2	**1000**				X			
3	**1000**				X			
4	**1000**				X			
5	**1000**				X			
6	**1000**				X			
7	**Sal min**							
8	**200**				X			
9	**200**				X			
10	**200**				X			
11	**200**				X			
12	**200**				X			
13	**175**	1	10	13				
14	**150**	2	10	14				
15	**135**	7	4	15				
16	**125**	8,9	4,4	16A-B				
17	**115**	10	4	17				
18	**100**	11	4	18				
19	**85**	12	4	19				
20	**75**	13	4	20				
21	**60**	14	4	21				
22	**45**	15,16	4,4	22A-B				
23	**25**	3	10	23				
24	**5**	4	10	24				

Notes:


G-1000, hot-194_s2_c14.cnv
Fluorescence, Seapoint
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
ISUS [voltage]
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
Pressure [dbar]
0
100
200
300
400
500
600
700
800
900
1000
1100
34.00
34.25
34.50
34.75
35.00
35.25
35.50
Salinity [PSU]
0
25
50
75
100
125
150
175
200
225
250
Oxygen [uMol/Kg]

Hawaiian Ocean Time-series

HOT-**194**

WOCE Deep 2 Data Sheet

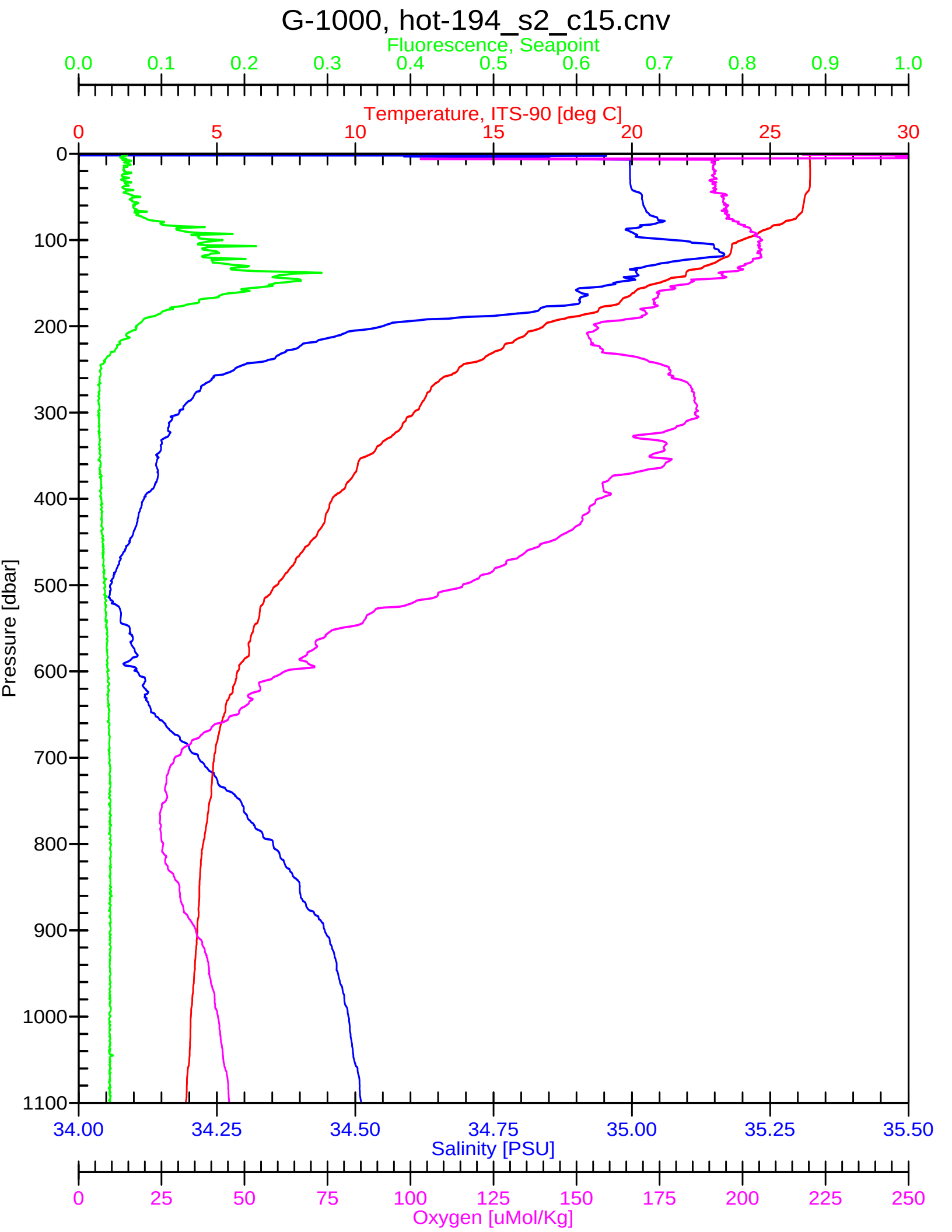
Station # 2 Date: 08-04-07 (HST)

Cast # 15 Time: 2336 (HST)

Operator(s): SC, TC, DV

Rosette Position	Desired Depth	Oxygen	Sample Temp.	MC	MR			
1	**4800**	109	4.6					
2	**4000**	110	4.7					
3	**4000**			X				
4	**4000**				X			
5	**3000**	111	5.2					
6	**3000**			X				
7	**3000**				X			
8	**2000**	112	5.2					
9	**2000**			X				
10	**2000**				X			
11	**1000**			X				
12	**1000**				X			
13	**800**				X			
14	**O2 min**	113	7.2					
15	**600**				X			
16	**Sal min**	114	9.1					
17	**400**				X			
18	**200**	115	17.5					
19	**175**				X			
20	**125**				X			
21	**O2 max**	116	23.7		X			
22	**75**				X			
23	**10**				X			
24	**5**	117	26.1					

Notes: Interesting oxygen feature at 200m=extra oxygen sample taken.
O2 max=100m


G-1000, hot-194_s2_c15.cnv
Fluorescence, Seapoint
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
Temperature, ITS-90 [deg C]
0
5
10
15
20
25
30
Pressure [dbar]
0
100
200
300
400
500
600
700
800
900
1000
1100
34.00
34.25
34.50
34.75
35.00
35.25
35.50
Salinity [PSU]
0
25
50
75
100
125
150
175
200
225
250
Oxygen [uMol/Kg]

Hawaiian Ocean Time-series

HOT- **194**

OPEN CAST Data Sheet

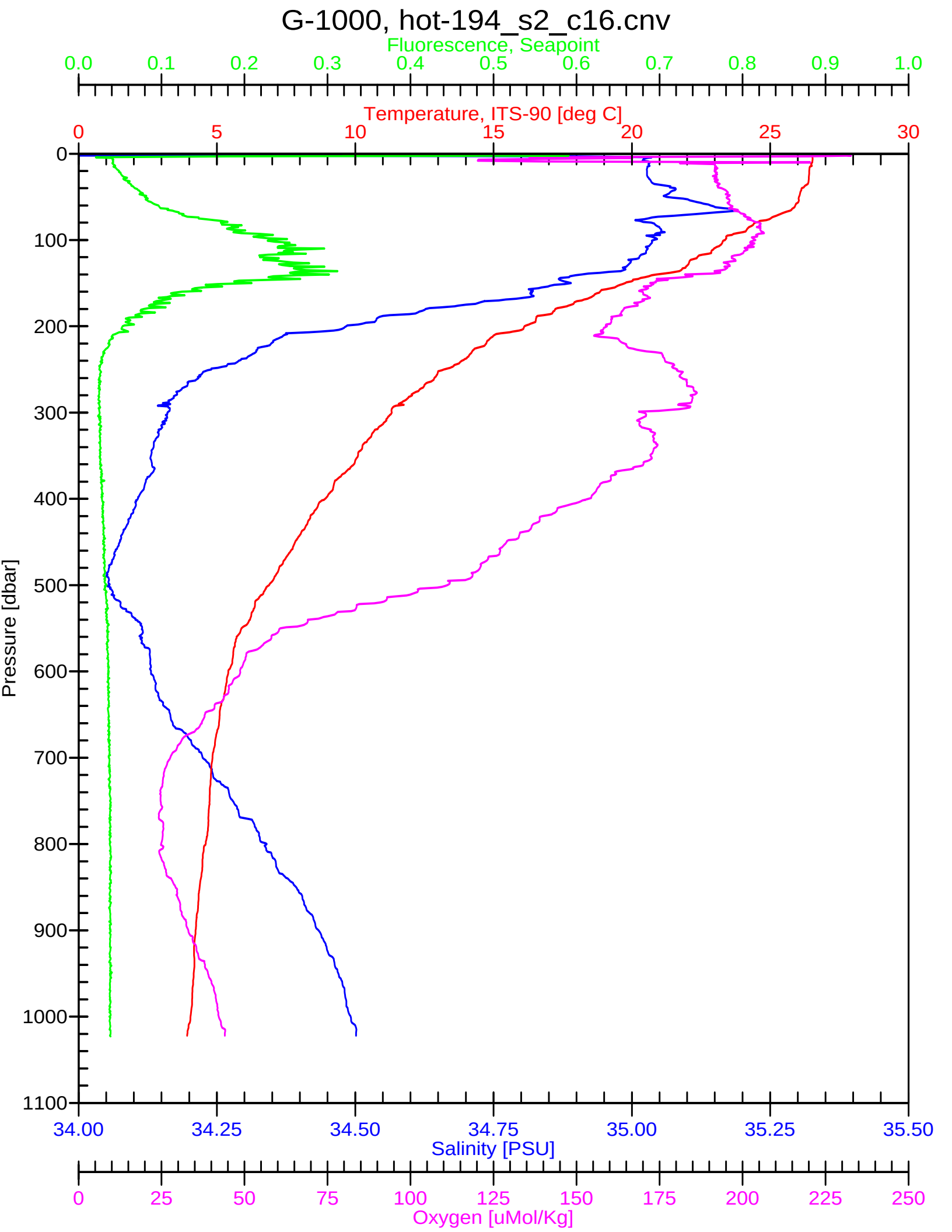
Station # 2 Date: 08-05-07 (HST)

Cast # 16 Time: 1536 (HST)

Operator(s): TC, DV, SC

Rosette Position	Desired Depth		MC	CMORE			
1	**1000**						
2	**1000**		X				
3	**1000**		X				
4	**500**		X				
5	**500**		X				
6	**200**		X				
7	**200**		X				
8	**45**			X			
9	**45**			X			
10	**45**			X			
11	**45**			X			
12	**45**			X			
13	**25**			X			
14	**25**			X			
15	**25**			X			
16	**25**			X			
17	**25**			X			
18							
19							
20							
21							
22							
23							
24							

Notes:


G-1000, hot-194_s2_c16.cnv
Fluorescence, Seapoint
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
Temperature, ITS-90 [deg C]
0
5
10
15
20
25
30
Pressure [dbar]
0
100
200
300
400
500
600
700
800
900
1000
1100
34.00
34.25
34.50
34.75
35.00
35.25
35.50
Salinity [PSU]
0
25
50
75
100
125
150
175
200
225
250
Oxygen [uMol/Kg]

Hawaiian Ocean Time-series

HOT- **194**

OPEN CAST Data Sheet

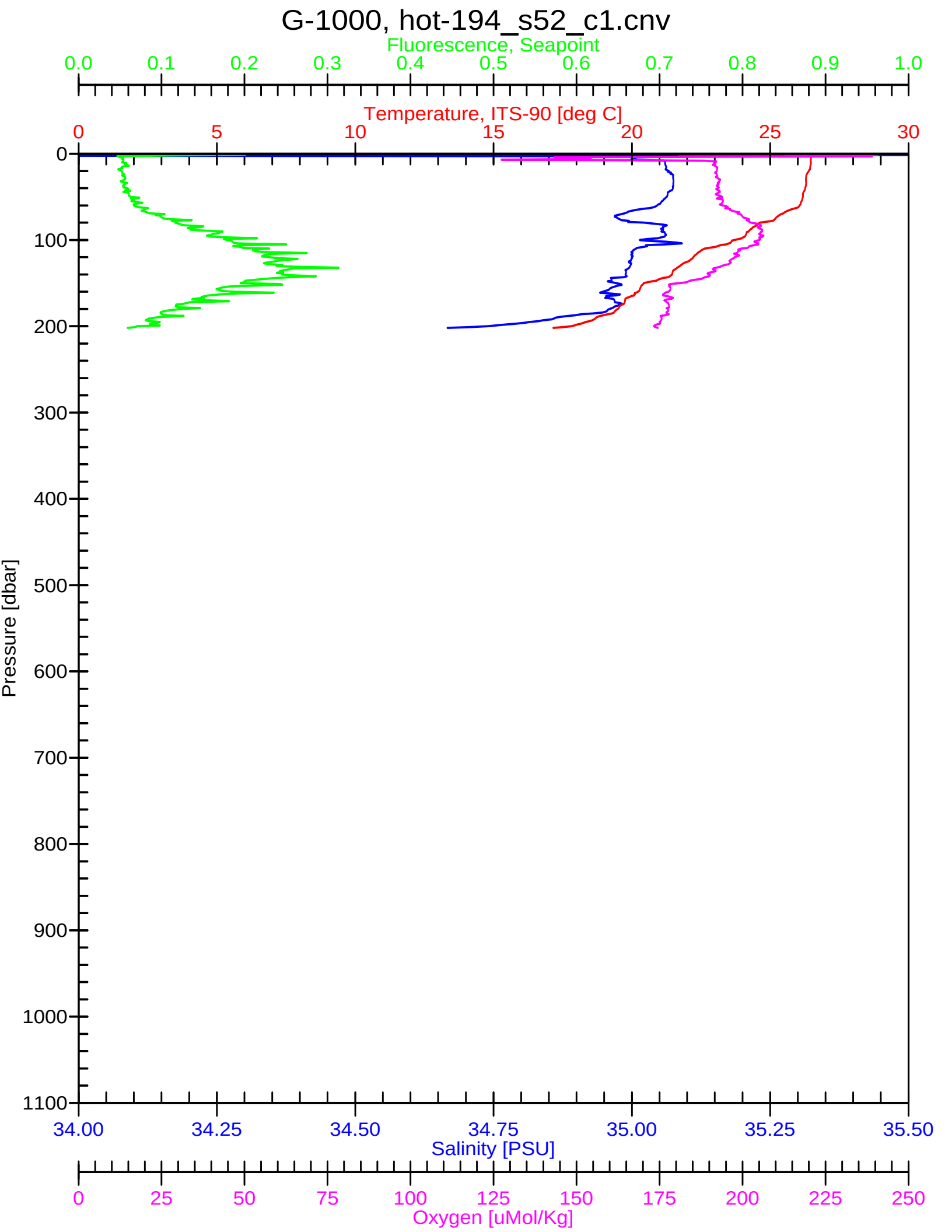
Station # 2 Date: _____ (HST)

Cast # 17 Time: _____ (HST)

Operator(s): _____

Rosette Position	Desired Depth		MC	CMORE			
1	**1000**						
2	**1000**		X				
3	**1000**		X				
4	**500**		X				
5	**500**		X				
6	**200**		X				
7	**200**		X				
8	**45**			X			
9	**45**			X			
10	**45**			X			
11	**45**			X			
12	**45**			X			
13	**25**			X			
14	**25**			X			
15	**25**			X			
16	**25**			X			
17	**25**			X			
18							
19							
20							
21							
22							
23							
24							

Notes: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Fluorescence, Seapoint
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
Temperature, ITS-90 [deg C]
0
5
10
15
20
25
30
Pressure [dbar]
0
100
200
300
400
500
600
700
800
900
1000
1100
34.00
34.25
34.50
34.75
35.00
35.25
35.50
Salinity [PSU]
0
25
50
75
100
125
150
175
200
225
250
Oxygen [uMol/Kg]

HOT-194: Chief Scientist Report

Chief Scientist: Susan Curless

HOT-194 Chief Scientist's Cruise Report
R/V Kilo Moana
August 2-6, 2007

Cruise ID: KM0713
Departed: August 2, 2007 at 0900 (HST)
Returned: August 6, 2007 at 1259 (HST)
Vessel: *R/V Kilo Moana*
Operator: University of Hawaii
Master of the Vessel: Captain Phil Smith
Chief Scientist: Susan Curless
OTG Electronics/Deck Operations Technicians: Elly Speicher and Kuhio Vellalos

1. SCIENTIFIC OBJECTIVES

The objective of the cruise is to maintain a collection of hydrographic and biogeochemical data at the Hawaii Ocean Time-series (HOT) stations. Five stations will be occupied during the cruise, in the following order:

1) Station 1, referred to as Station Kahe, is located at 21° 20.6'N, 158° 16.4'W and will be occupied on the first day of the cruise for about 2 hours.
2) Station 2, referred to as Station ALOHA is defined as a circle with a 6 nautical mile radius centered at 22° 45'N, 158°W. This is the main HOT station and will be occupied during the 2nd, 3rd, and 4th days of the cruise.
3) Station 52, is the site of the WHOTS Mooring, located at 22° 40.208'N, 157° 57.001'W will be occupied on the 4th day of the cruise for about 1 hour.
4) Station 6, referred to as Station Kaena, is located off Kaena Point at 21° 50.8'N, 158° 21.8'W will be occupied on the 4th day of the cruise for about 2 hours.

Upon arrival to Station Kahe a 400 lb. weight-test cast, one CTD cast to 1000 m, and a PRR cast was to be conducted at this location in the afternoon of August 2nd. The single CTD cast was to be conducted to collect continuous profiles of various physical and chemical parameters. Water samples were to be collected at discrete depths for biogeochemical measurements. After these operations were satisfactorily completed, the ship was to proceed to Station ALOHA.

Upon arrival at Station ALOHA, the free-drifting sediment trap array was to be deployed. The sediment trap array was to stay in the water for about 52 hours. This was to be followed by two shallow CTD casts (<200 m) to collect water for incubation experiments. After this, a free-drifting array with incubation experiments (gas array) was

to be deployed for 24 hours. A full-depth CTD cast was to be conducted after the deployment of the gas array, followed by 1000-m CTD casts at strict 3 hour intervals for at least 36 hours for continuous and discrete data collection, ending with another full-depth CTD cast on August 4th.

One free-drifting array (primary production) was to be deployed for 12 hours for incubation experiments on August 4th. Following the depoyment of the primary production array, the gas array was to be recovered at 0700 on June 10th.

A plankton net was to be towed near noon and midnight for 30-min intervals on August 3rd and 4th at Station ALOHA.

A Profiling Reflectance Radiometer (PRR) was to be deployed for half-hour periods near noon time on August 2nd, 4th and 5th.

A package including a Wet Labs AC9, a Chelsea Fast Repetition Rate Fluorometer (FRRf), and a SeaBird Seacat was to be used to profile the upper 200 m at Station ALOHA around noon time on August 4th and 5th, and in the early morning on August 5th.

After CTD work at Station ALOHA was accomplished, the ship was to transit to recover the floating sediment trap array on August 5th.

After recovering the sediment traps, the ship was to transit to Station 52 (WHOTS) for a one hour 200-m Yo-Yo CTD cast. After the CTD cast the ship was to transit back to Station ALOHA to conduct light casts (PRR, AC9/FRRf). Following the light casts would have been a 200m CTD cast at Station ALOHA.

After operations at Station ALOHA ended, the ship was to transit to Station 6 (Kaena).

A near-bottom CTD cast (~2500 m) was to be conducted at Station 6 including salinity samples for calibration, after which the ship was to transit back to Snug Harbor.

The following instruments were to collect data throughout the cruise: shipboard ADCP, thermosalinograph, underway fluorometer, and two anemometers.

2. SCIENCE PERSONNEL

BEACH group:

Cruise Participant	Title	Affiliation
Tara Clemente	Research Associate	UH/BEACH
Susan Curless	Chief Scientist – Res.Assoc.	UH/BEACH
Lance Fujieki	Computer Specialist	UH/BEACH
Adriana Harlan	Technician	UH/BEACH
Dan Sadler	Research Associate	UH/BEACH
Brett Updyke	Technician	UH/BEACH
Blake Watkins	Marine Engineer	UH/BEACH
Donn Viviani	Graduate Student	UH/BEACH

PO group:

Paul Lethaby (Watch Leader)	Research Associate	UH
Fernando Santiago-Mandujano (Watch Leader)	Research Associate	UH
Nina Ribbat	Undergraduate Student	HPU
Jefrey Snyder	Marine Technician	UH
Justin Smith	Undergraduate Student	UH
Lisa Tatsumi	Volunteer	UH/PO
Svetlana Port	Volunteer	UH/PO

Others:

Cynthia Peacock	Technician	UW/BEACH
Tracy Campbell	Technician	UH/ Rappe
Elly Speicher	Marine Technician	OTG
KuhioVellalos	Marine Technician	OTG
Nicole Torres	Intern	MATE/OTG

3. GENERAL SUMMARY

Operations were delayed and in some cases cancelled due to starboard engine failure at 2039 on August 2nd. The starboard engine remained offline for most of the trip which left the ship with the capability of traveling at 7 knots. The slow traveling speed of the ship combined with the far drifting distance of deployed arrays caused delays and cancellations in the schedule to accommodate additional transit time needed to recovery sites. Additional time was also needed for the transit from Station ALOHA to Snug Harbor. The ship arrived at Snug Harbor with a Tug escort at 1259 on August 6th.

Three power failures/surges were also experienced throughout the cruise. One power surge was at 0825 on August 2nd as the switch to ship from shore power was made at the dock, and two failures were experienced at sea while on station. The first power outage was a ship wide blackout at 0202 August 3rd that cut power to all systems. Fortunately the CTD console equipment was on a UPS and no data was lost despite the package being in the water while the power outage occurred. The second power outage affected the CTD winch at 2053 on August 3rd and also occurred while the CTD package was in the water. Again no data was lost.

One 1000-m CTD cast was conducted at Station Kahe (1). Two near-bottom deep casts, fourteen 1000-m CTD casts, and two 200-m casts were conducted at Station ALOHA (2). A one hour 200m yo-yo cast was conducted at Station 52. The CTD wire was reterminated one time during the course of the cruise.

Operations cancelled due to the ships propulsion issues include one 1000m CTD cast during the 36 burst period, two day time net tows, and one near bottom CTD cast (~2500m) at Station 6.

Operations cancelled due to equipment failure included two Profiling Reflectance Radiometer (PRR) casts.

The array of floating sediment traps, the gas array, and the primary production array were deployed and recovered without any major incidents. The arrays drifted NW of ALOHA.

Four net tows were completed, three net tows at night and one during the day.

The AC9/FRRf was deployed around noon two times, and one time at night.
The PRR was deployed once around noon time on August 2nd.

The ADCP ran without interruption throughout the cruise, as well as the thermosalinograph, and the ship's two anemometers.

Winds were from the northeast between 15-20 knots during the course of the cruise.

We arrived at Snug Harbor on August 6th, at 1259.

4. R/V KILO MOANA, OFFICERS AND CREW, TECHNICAL SUPPORT

Despite having encountered engine and power failures on this cruise, the R/V Kilo Moana continues to maintain excellent ship support for our work.
The Captain and crew were most helpful and accommodating throughout the issues we encountered. They were very flexible in receiving changes to our operational schedule. The crew (especially the engineers) did not hesitate to work long hours in efforts of fixing the starboard engine for our operations but could not over come the electrical issues despite their best efforts.

Throughout our cruise, the entire crew showed enthusiasm, concern, and dedication to our scientific mission.

Technical support during this cruise was excellent. OTG personnel were available at any time to assist in our work and helped keep operations running smoothly.

The support staff continues to provide good logistical, shore and shipboard support. However, during our dedicated off loading day, members of our personnel were forced to remain aboard the ship while loading of equipment for the ship's next cruise occurred. The shore crane lowered the gangway to off load the 10ft blue HOT van and HOT CTD rosette. Since the crane was already in position, the MVP (needed for the ship's next cruise) was loaded before the gangway was replaced. The MVP was not staged and ready for loading, meaning someone purposely initiated the loading of this equipment before our off loading was complete. Personnel on board had to wait while the MVP was brought over to the ship creating even further delays. Having the double picking of MVP across the deck (shore crane onto ship, then ship crane to it's location on the deck) was disruptive, time consuming and could have created a safety issue with the personnel on board who were not expecting the loading of equipment for the next cruise during an off loading day. The loading of the MVP also took the attention of the crew away from HOT gear off loading. The shore crane replaced the gangway after the MVP was aboard and then proceeded to load the OTG radiation van, needed for the next cruise as well. Again, this equipment was not staged and consumed the crew's attention away from off loading of HOT gear.
These things happened before all of the HOT gear and samples on the ship had been off loaded, and these actions were not cleared with the Chief Scientist. Had the equipment that needed to be loaded been staged, ready, and permission cleared through the proper channels, the delay to our personnel would have been more understandable.
As it stands though, the delay to our personnel who remained on board was uncalled for and very inconvenient as they needed to get cruise gear to their storage workshop in a time critical fashion. They share their space with other personnel not related to the HOT program who need to lock the doors to their combined space for security measures when they depart campus at 1500.

5. DAILY REPORT OF ACTIVITIES (HST)

August 1, 2007 – Loading Day

Heavy equipment and the blue storage van loaded during this day.

CTD wire was reterminated.

August 2, 2007

R/V Kilo Moana departed Snug Harbor at 0900.

0945- Safety briefing by Captain Phil and science party meeting. All new personnel met with Chief Mate for immersion suit training and life boat orientation.

1200- Arrived at Station Kahe and conducted weight test with 1300 pound weight to more closely approximate weight of CTD package. J. Snyder inspected wire.

1250- Profiling Reflectance Radiometer (PRR) deployed

1330- Near bottom (~1400m) CTD cast conducted at Station Kahe.

1512- End of CTD cast.

-CTD wire re-terminated due to kink found in wire that was noticed as the cast was being deployed. This must have occurred during crane stowage after the weight cast.

1520- Transit ALOHA

2100- Starboard engine relay malfunction. Continued towards ALOHA using the port engine while repairs were made.

2135- Starboard engine brought back on-line. Further repairs and engine assessments will be needed once on station.

2330- Arrive ALOHA

-Ship settling into station using port engine and bow thruster proved sufficient for sediment trap deployment. Starboard engine was secured for repairs.
Based on current and wind data the ship was relocated to 1nm south of the center for sediment trap deployment.

August 3rd, 2007

0103- Sediment trap array released 22°44.076'N 158°0.125'W

0141- 200m CTD cast deployed

0159- Complete loss of ship power.

-The cast was at 21m on the way up to the surface. Data collection did not stop due to UPS backup of all CTD console equipment. After power was restored, the cast was completed and the package safely recovered.

0300- 200m CTD cast deployed.

0440- Gas array deployed: 22°45.7'N 158°0.4'W

0459- PO Deep cast (4800m near bottom) deployed and the beginning of the 36 hour period.

1000- Net Tow

1133- PO Shallow 1000m CTD cast deployed.
-This cast deployment was delayed due to a sensor failure.

1308- ATE deployment

1345- Net Tow

1419 – Cast 5

1708 – Cast 6

2000- Cast 7
-Twists in the wire were noticed to be starting a potential birdcage area on the cable. After the cast the wire will be disconnected from the CTD packages and the twists removed to prevent birdcage.

2053 – Winch lost power during cast-package held at 188 dbar.

2200- Net tow

2300- Cast 8

August 4th, 2007

The PRR has been reported to be inoperable. The cable attachment to the instrument itself has become unattached and the pin connection cannot be replaced despite the best attempt of repairs by L.Fujieki and J. Snyder.

0100- Net Tow

0200- Cast 9

0400- Cast 10

0538- Deployment of the primary production array. 22°45.227'N 157°58.904

0545- Transit Gas array.

0850- Gas array Recovered.

*** Further engine trouble on August 3rd left us with just the port screw and the bow thruster and the ability to only travel 7kts. The Gas Array traveled 22nm NW of ALOHA to the recovery position of 22°55.222'N 158°20.996'W.

Due to long transit time, the 0800 cast was cancelled and absorbed into the 1000 cast. MIT, PSi and the Matt Church profile were accommodated by combining both scheduled casts. The CMORE depth left off of this cast will be accommodated later in the cruise if time allows.

The two day time net tows scheduled around noon on August 4th were cancelled to compensate for time lost due to slow ship transit back to ALOHA and allow time for the 1000m CTD cast.

In talking with Captain Phil (who has talked with Gray) it was decided that we will remain at ALOHA to get as much science done as possible and have a late arrival into Snug. With only one engine it will take approximately 16 hours to get back to the dock. A few extra hours will be budgeted into the schedule for transit time to arrays for recovery, and Kaena will be cancelled.
At this time, we are aiming to leave ALOHA at 2000 on August 5th, which would put as at the dock around 1000 on August 6th.

1357- Start cast 11

1334- AC9-Frrf cast

1426- Cast 12

1732- Cast 13

1905- Recovery of PP array 22°49.67'N 158°7.30'W

2002- Cast 14

2220- Net Tow
-net tow was delayed for ship maneuvering away from an underway sailboat

2336- Cast 15 - PO second deep cast – End of the 36 hour period.
-delayed for ship re-positioning to the center of the circle

August 5th, 2007

Activities throughout this day were rescheduled for the most efficient maneuvering of the ship. The activities at Station ALOHA would be completed before steaming south to the location of Station 52. The ship would then steam home as soon as operations at Station 52 were complete.

0320- AC9 cast

0425- Transit to sediment traps

0900- Recovery of sediment traps. 22°56.05'N 158°34.1'W The sediment traps traveled 33nm NW of ALOHA.

0915- Transit to ALOHA

1326- Arrive ALOHA –Start of back to back AC9-FRRf casts

1440- start of second AC9-FRRf cast

1545- Cast 16

This cast was scheduled to be a 200m cast but was rescheduled to be a 1000m cast to accommodate water needs missed due to cancellations and delays.

1650- Transit Station 52

1847- Arrive Station 52 and begin Yo-Yo CTD cast.

-six casts to 200m were accomplished during a one hour period.

2000- Transit Snug

August 6th, 2007

1210- arrive at sea buoy for Tug escort to dock

1259- arrive Snug Harbor

HOT program sub-components:

Investigator:	Project/Institution:
Dave Karl	Core Biogeochemistry/UH
Roger Lukas	Hydrography/UH
Bob Bidigare	HPLC pigments/UH
Mike Landry	Zooplankton dynamics/UH
Mark Abbott/Ricardo Letelier	Optical measurements/OSU

Ancillary programs:

Investigator:	Project/Institution:
Charles Keeling	CO2 dynamics and intercalibration/SIO
Paul Quay	DI13C and O isotopes/UW
Penny Chisholm	Prochlorococcus population dynamics/MIT
Zehr/Church/Montoya	Diversity and activities of nitrogen-fixing microorganisms/UH
Various CMORE PI's	Microbial RNA/DNA collection/CMORE

Additional programs

Investigator:	Project/Institution:
Mike Rappe	Marine bacterioplankton community structure/UH
Edward Boyle	Trace metals