



Laboratory Division

DS QA BLANK

Department of Environmental Quality Laboratory Watershed Assessment Section Multiparameter Logger Monitoring Report

LASAR #	SITENAME	FILENAME	CASE #
	Deschutes River at Wagonblast Campground; RM. 4.0	AUG15949	

NOTE: GRADE F is a manual grade for "exceptional event" level data only(See DQM for further explanation). GRADE D is a manual grade for "missing" data. Grade E is data of an unknown quality or of known poor quality. **GRADES D, E AND F REQUIRE AN EXPLANATION IN THE RUN COMMENTS SECTION.**

ELEVATION (ft)

TEMPERATURE AUDIT RESULTS					
#	Audit	DS Value	Abs. Difference	Status	
1		20.5	20.3	0.20	GRADE A
2		17.5	17.5	0.00	GRADE A
3		20.0	19.8	0.20	GRADE A
4		17.5	17.2	0.30	GRADE A
5		19.7	19.6	0.10	GRADE A
6		17.0	17	0.00	GRADE A
7					

Criteria:

GRADE A	GRADE B	GRADE C
=<±1.5	=<±1.51 - 2.00	=>±2.01

pH AUDIT RESULTS					
#	Audit	DS Value	Abs. Difference	Status	
1		6.4	9	2.60	GRADE C
2		8.0	8.3	0.28	GRADE A
3		8.8	9	0.20	GRADE A
4		8.2	8.3	0.10	GRADE A
5		8.8	9	0.20	GRADE A
6		8.1	8.2	0.10	GRADE A
7					

Criteria:

GRADE A	GRADE B
=<±0.3	=<±0.31 -0.5 =>±0.5

CONDUCTIVITY AUDIT RESULTS					
#	Audit	DS Value	Abs % Difference	Status	
1		113	115	2%	GRADE A
2		115	116	1%	GRADE A
3		116	116	0%	GRADE A
4		116	116	0%	GRADE A
5		116	117	1%	GRADE A
6		115	118	3%	GRADE A
7					

Criteria:

GRADE A	GRADE B	Grade D or E
=<±10%	=<±10.1% - 15%	=>±15%

DO AUDIT RESULTS					
#	Audit	DS Value	Abs. Difference	Status	
1		10.9	11.1	0.20	GRADE A
2		10.1	10.8	0.70	GRADE B
3		10.1	11.4	1.30	GRADE E
4		9.8	10.9	1.10	GRADE E
5		10.2	11.5	1.30	GRADE E
6		9.7	10.8	1.10	GRADE E
7					

Criteria: units in mg/L

GRADE A	GRADE B	GRADE E	GRADE C
(≤± 0.3)	(≤± 0.31-1.0)	(≤±1.01-2.0)	(≥±2.01)

RUN COMMENTS:

#	AUDIT RESULTS:								
	LASAR #	DATE (mm/dd/yyyy)	TIME (hh:mm)	TEMP (deg C)	pH (SU)	CONDUCTIVITY (umhos/cm)	DO (mg/L)	DO SAT %	COMMENTS
1	0	8/5/2014	17:30	20.5	6.4	113	10.9	120%	
2	0	8/6/2014	10:00	17.5	8.02	115	10.1	105%	
3	0	8/6/2014	17:00	20	8.8	116	10.1	110%	
4	0	8/7/2014	10:00	17.5	8.2	116	9.8	102%	
5	0	6/7/2014	17:00	19.7	8.8	116	10.2	110%	
6	0	8/8/2014	10:00	17	8.1	115	9.7	100%	
7	0								

LASAR	Date	Time	Temp	pH	SpCond	DO	DO Sat	TEMP AUDIT	pH AUDIT	SP.COND AUDIT	DO AUDIT
10000	8/5/2014	11:00	18.2	7.8	114	11.1	117%				
10000	8/5/2014	11:15	18.2	8.2	114	11.2	119%				
10000	8/5/2014	11:30	18.3	8.4	114	11.2	119%				
10000	8/5/2014	11:45	18.4	8.5	114	11.3	121%				
10000	8/5/2014	12:00	18.5	8.6	114	11.4	121%				
10000	8/5/2014	12:15	18.6	8.6	114	11.4	122%				
10000	8/5/2014	12:30	18.7	8.7	114	11.5	123%				
10000	8/5/2014	12:45	18.8	8.7	114	11.5	124%				
10000	8/5/2014	13:00	18.9	8.7	114	11.5	124%				
10000	8/5/2014	13:15	19.0	8.7	114	11.6	125%				
10000	8/5/2014	13:30	19.2	8.8	114	11.6	126%				
10000	8/5/2014	13:45	19.3	8.8	114	11.6	126%				
10000	8/5/2014	14:00	19.4	8.8	114	11.6	126%				
10000	8/5/2014	14:15	19.5	8.8	114	11.6	127%				
10000	8/5/2014	14:30	19.6	8.9	114	11.6	127%				
10000	8/5/2014	14:45	19.7	8.9	114	11.6	127%				
10000	8/5/2014	15:00	19.8	8.9	114	11.6	127%				
10000	8/5/2014	15:15	19.9	8.9	114	11.6	127%				
10000	8/5/2014	15:30	20.0	8.9	114	11.6	127%				
10000	8/5/2014	15:45	20.0	8.9	114	11.5	127%				
10000	8/5/2014	16:00	20.1	8.9	114	11.5	127%				
10000	8/5/2014	16:15	20.2	8.9	115	11.4	126%				
10000	8/5/2014	16:30	20.2	9.0	115	11.4	126%				
10000	8/5/2014	16:45	20.2	8.9	115	11.3	125%				
10000	8/5/2014	17:00	20.3	9.0	115	11.2	124%				
10000	8/5/2014	17:15	20.3	9.0	115	11.2	124%				
10000	8/5/2014	17:30	20.3	9.0	115	11.1	123%	20.3	6.4	113	10.9
10000	8/5/2014	17:45	20.3	8.9	115	11.0	122%				
10000	8/5/2014	18:00	20.3	9.0	115	10.9	121%				
10000	8/5/2014	18:15	20.2	8.9	115	10.7	118%				
10000	8/5/2014	18:30	20.2	8.9	115	10.6	117%				
10000	8/5/2014	18:45	20.2	8.9	115	10.6	117%				
10000	8/5/2014	19:00	20.2	8.9	115	10.5	115%				
10000	8/5/2014	19:15	20.1	8.9	115	10.4	114%				
10000	8/5/2014	19:30	20.1	8.9	115	10.3	113%				

10000	8/5/2014	19:45	20.1	8.9	115	10.2	112%
10000	8/5/2014	20:00	20.0	8.9	115	10.1	111%
10000	8/5/2014	20:15	20.0	8.8	115	10.0	110%
10000	8/5/2014	20:30	19.9	8.8	116	9.9	108%
10000	8/5/2014	20:45	19.9	8.8	116	9.8	107%
10000	8/5/2014	21:00	19.8	8.8	116	9.7	106%
10000	8/5/2014	21:15	19.7	8.7	116	9.6	105%
10000	8/5/2014	21:30	19.7	8.7	116	9.5	104%
10000	8/5/2014	21:45	19.6	8.7	116	9.4	103%
10000	8/5/2014	22:00	19.6	8.7	116	9.4	102%
10000	8/5/2014	22:15	19.5	8.6	116	9.3	101%
10000	8/5/2014	22:30	19.4	8.6	116	9.3	101%
10000	8/5/2014	22:45	19.3	8.5	116	9.2	100%
10000	8/5/2014	23:00	19.3	8.5	116	9.2	99%
10000	8/5/2014	23:15	19.2	8.5	117	9.2	99%
10000	8/5/2014	23:30	19.1	8.4	116	9.1	99%
10000	8/5/2014	23:45	19.0	8.4	116	9.1	98%
10000	8/6/2014	0:00	18.9	8.4	117	9.1	98%
10000	8/6/2014	0:15	18.9	8.3	117	9.1	98%
10000	8/6/2014	0:30	18.8	8.3	117	9.1	97%
10000	8/6/2014	0:45	18.7	8.2	117	9.1	97%
10000	8/6/2014	1:00	18.6	8.2	117	9.1	97%
10000	8/6/2014	1:15	18.5	8.1	117	9.0	97%
10000	8/6/2014	1:30	18.5	8.1	117	9.0	96%
10000	8/6/2014	1:45	18.4	8.0	117	9.0	96%
10000	8/6/2014	2:00	18.3	8.0	117	9.0	96%
10000	8/6/2014	2:15	18.2	7.9	117	9.0	96%
10000	8/6/2014	2:30	18.2	7.9	117	9.0	96%
10000	8/6/2014	2:45	18.1	7.9	117	9.0	96%
10000	8/6/2014	3:00	18.0	7.8	117	9.0	96%
10000	8/6/2014	3:15	18.0	7.8	117	9.1	96%
10000	8/6/2014	3:30	17.9	7.8	117	9.1	96%
10000	8/6/2014	3:45	17.9	7.8	117	9.1	96%
10000	8/6/2014	4:00	17.8	7.7	117	9.1	96%
10000	8/6/2014	4:15	17.7	7.7	117	9.1	96%
10000	8/6/2014	4:30	17.6	7.7	117	9.1	95%
10000	8/6/2014	4:45	17.6	7.7	117	9.1	95%

10000	8/6/2014	5:00	17.5	7.7	117	9.1	95%
10000	8/6/2014	5:15	17.4	7.7	117	9.1	95%
10000	8/6/2014	5:30	17.4	7.7	117	9.2	95%
10000	8/6/2014	5:45	17.3	7.6	117	9.2	95%
10000	8/6/2014	6:00	17.2	7.6	116	9.2	96%
10000	8/6/2014	6:15	17.2	7.6	116	9.2	96%
10000	8/6/2014	6:30	17.1	7.6	116	9.3	96%
10000	8/6/2014	6:45	17.1	7.6	116	9.3	96%
10000	8/6/2014	7:00	17.0	7.6	116	9.4	97%
10000	8/6/2014	7:15	17.0	7.7	116	9.4	97%
10000	8/6/2014	7:30	17.0	7.7	116	9.4	98%
10000	8/6/2014	7:45	17.0	7.7	116	9.5	98%
10000	8/6/2014	8:00	17.0	7.7	116	9.7	101%
10000	8/6/2014	8:15	17.0	7.8	116	9.9	102%
10000	8/6/2014	8:30	17.1	7.9	116	10.0	103%
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10000	8/6/2014	10:00	17.5	8.3	116	10.8	113%
10000	8/6/2014	10:15	17.6	8.3	116	10.9	115%
10000	8/6/2014	10:30	17.7	8.4	116	11.0	116%
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17.5 8.02 115 10.1

10000	8/6/2014	14:15	19.2	8.8	115	11.7	127%
10000	8/6/2014	14:30	19.3	8.8	116	11.7	127%
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10000	8/6/2014	23:00	18.8	8.5	119	9.3	100%
10000	8/6/2014	23:15	18.8	8.4	119	9.3	100%

20	8.8	116	10.1
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10000	8/6/2014	23:30	18.7	8.4	119	9.3	99%
10000	8/6/2014	23:45	18.6	8.3	119	9.2	99%
10000	8/7/2014	0:00	18.6	8.3	119	9.2	98%
10000	8/7/2014	0:15	18.5	8.3	119	9.2	98%
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10000	8/7/2014	8:00	16.7	7.7	117	9.8	100%
10000	8/7/2014	8:15	16.8	7.8	117	9.9	102%
10000	8/7/2014	8:30	16.8	7.9	117	10.1	104%

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10000	8/7/2014	16:45	19.5	9.0	117	11.5	126%
10000	8/7/2014	17:00	19.5	9.0	117	11.5	125%
10000	8/7/2014	17:15	19.6	9.0	117	11.4	125%
10000	8/7/2014	17:30	19.6	9.0	118	11.3	124%
10000	8/7/2014	17:45	19.6	9.0	117	11.3	123%

17.5 8.2 116 9.8

19.7 8.8 116 10.2

10000	8/7/2014	18:00	19.6	9.0	117	11.2	122%
10000	8/7/2014	18:15	19.6	9.0	118	11.0	119%
10000	8/7/2014	18:30	19.6	9.0	117	10.8	118%
10000	8/7/2014	18:45	19.5	8.9	118	10.7	117%
10000	8/7/2014	19:00	19.5	8.9	118	10.6	116%
10000	8/7/2014	19:15	19.5	8.9	118	10.5	114%
10000	8/7/2014	19:30	19.5	8.9	118	10.4	113%
10000	8/7/2014	19:45	19.5	8.9	118	10.3	112%
10000	8/7/2014	20:00	19.4	8.9	118	10.2	111%
10000	8/7/2014	20:15	19.4	8.9	118	10.1	110%
10000	8/7/2014	20:30	19.4	8.8	118	10.0	108%
10000	8/7/2014	20:45	19.4	8.8	118	9.9	107%
10000	8/7/2014	21:00	19.3	8.8	118	9.8	106%
10000	8/7/2014	21:15	19.2	8.8	118	9.7	105%
10000	8/7/2014	21:30	19.1	8.7	119	9.6	104%
10000	8/7/2014	21:45	19.1	8.7	119	9.5	103%
10000	8/7/2014	22:00	19.0	8.6	119	9.4	102%
10000	8/7/2014	22:15	18.9	8.6	119	9.4	101%
10000	8/7/2014	22:30	18.9	8.6	119	9.3	100%
10000	8/7/2014	22:45	18.8	8.5	119	9.3	100%
10000	8/7/2014	23:00	18.7	8.5	120	9.3	99%
10000	8/7/2014	23:15	18.7	8.3	119	9.2	99%
10000	8/7/2014	23:30	18.6	8.4	119	9.2	99%
10000	8/7/2014	23:45	18.5	8.4	119	9.2	98%
10000	8/8/2014	0:00	18.5	8.3	119	9.2	98%
10000	8/8/2014	0:15	18.4	8.3	119	9.2	98%
10000	8/8/2014	0:30	18.4	8.2	119	9.1	97%
10000	8/8/2014	0:45	18.3	8.2	119	9.1	97%
10000	8/8/2014	1:00	18.2	8.2	119	9.1	97%
10000	8/8/2014	1:15	18.2	8.1	119	9.1	97%
10000	8/8/2014	1:30	18.1	8.1	119	9.1	96%
10000	8/8/2014	1:45	18.1	8.0	119	9.1	96%
10000	8/8/2014	2:00	18.0	8.0	120	9.1	96%
10000	8/8/2014	2:15	17.9	7.9	120	9.1	96%
10000	8/8/2014	2:30	17.9	7.9	119	9.1	96%
10000	8/8/2014	2:45	17.8	7.9	120	9.1	96%
10000	8/8/2014	3:00	17.7	7.8	119	9.1	96%

10000	8/8/2014	3:15	17.7	7.8	119	9.1	96%
10000	8/8/2014	3:30	17.6	7.8	119	9.1	96%
10000	8/8/2014	3:45	17.5	7.8	119	9.1	96%
10000	8/8/2014	4:00	17.5	7.7	120	9.1	96%
10000	8/8/2014	4:15	17.4	7.7	119	9.1	95%
10000	8/8/2014	4:30	17.3	7.7	119	9.2	95%
10000	8/8/2014	4:45	17.3	7.7	119	9.2	95%
10000	8/8/2014	5:00	17.2	7.7	119	9.2	95%
10000	8/8/2014	5:15	17.1	7.7	119	9.2	95%
10000	8/8/2014	5:30	17.1	7.7	119	9.2	95%
10000	8/8/2014	5:45	17.0	7.6	119	9.2	95%
10000	8/8/2014	6:00	17.0	7.6	119	9.2	95%
10000	8/8/2014	6:15	16.9	7.6	119	9.3	96%
10000	8/8/2014	6:30	16.9	7.6	119	9.3	96%
10000	8/8/2014	6:45	16.8	7.6	119	9.3	96%
10000	8/8/2014	7:00	16.8	7.7	119	9.4	97%
10000	8/8/2014	7:15	16.8	7.7	118	9.5	98%
10000	8/8/2014	7:30	16.7	7.7	118	9.6	99%
10000	8/8/2014	7:45	16.7	7.7	118	9.7	99%
10000	8/8/2014	8:00	16.7	7.8	118	9.8	100%
10000	8/8/2014	8:15	16.7	7.8	118	9.9	102%
10000	8/8/2014	8:30	16.7	7.9	118	10.1	103%
10000	8/8/2014	8:45	16.8	7.9	118	10.2	105%
10000	8/8/2014	9:00	16.8	8.0	118	10.3	106%
10000	8/8/2014	9:15	16.9	8.1	118	10.5	108%
10000	8/8/2014	9:30	16.9	8.1	118	10.6	109%
10000	8/8/2014	9:45	17.0	8.2	118	10.7	110%
10000	8/8/2014	10:00	17.0	8.2	118	10.8	112%
10000	8/8/2014	10:15	17.1	8.3	118	10.9	113%
10000	8/8/2014	10:30	17.2	8.4	118	11.0	114%
10000	8/8/2014	10:45	17.3	8.4	117	11.2	116%
10000	8/8/2014	11:00	17.4	8.5	118	11.3	117%
10000	8/8/2014	11:15	17.5	8.5	118	11.4	119%
10000	8/8/2014	11:30	17.6	8.6	117	11.4	120%
10000	8/8/2014	11:45	19.8	8.6	117	11.4	125%



17 8.1 115 9.7

Data Validation Criteria for Water Quality Parameters Measured in the Field

Data Quality Level	Quality Assurance Plan	Water Temperature Methods	pH Methods	Dissolved Oxygen Methods	Turbidity Methods	Conductivity Methods	Bacteria Methods	Data Uses
A+	DEQ QAPP approved by DEQ QA Officer	Thermometer Accuracy checked with NIST standards A ≤ ± 0.5°C P ≤ ± 1.5°C	Calibrated pH electrode A ≤ ± 0.2 S.U. P ≤ ± 0.3 S.U.	Winkler titration or calibrated Oxygen meter A ≤ ± 0.2 mgL ⁻¹ P ≤ ± 0.3 mgL ⁻¹	Nephelometric Turbidity meter A ≤ ± 5% Standard value P ≤ ± 5%	Meter with temp correction to 25°C A ≤ ± 7% of standard value P ≤ ± 10%	DEQ Approved Methods Absolute difference between log-transformed values F ≤ 0.6 log	Regulatory, permitting, compliance (e.g., 303(d) and 305(b) assessments)
A	External QAPP	External Data Thermometer Accuracy checked with NIST standards A ≤ ± 0.5°C P ≤ ± 1.5°C	External Data Calibrated pH electrode A ≤ ± 0.2 S.U. P ≤ ± 0.3 S.U.	External Data Winkler titration or calibrated Oxygen meter A ≤ ± 0.2 mgL ⁻¹ P ≤ ± 0.3 mgL ⁻¹	External Data Nephelometric Turbidity meter A ≤ ± 5% Standard value P ≤ ± 5%	External Data Meter with temp correction to 25°C A ≤ ± 7% of standard value P ≤ ± 10%	External Data DEQ Approved Methods Absolute difference between log-transformed values F ≤ 0.6 log	Regulatory, permitting, compliance (e.g., 303(d) and 305(b) assessments)
B	Minimum Data Acceptance Criteria Met	Thermometer Accuracy checked with NIST standards A ≤ ± 1.0°C P ≤ ± 2.0°C	Any Method A ≤ ± 0.5 S.U. P ≤ ± 0.5 S.U.	Winkler titration or calibrated Oxygen meter A ≤ ± 1 mgL ⁻¹ P ≤ ± 1 mgL ⁻¹	Any Method A ≤ ± 30% P ≤ ± 30%	Meter with temp correction to 25°C A ≤ ± 10% of standard value P ≤ ± 15%	DEQ Approved Methods Absolute difference between log-transformed values F ≤ 0.8 log	Regulatory, permitting, compliance (e.g., 303(d) and 305(b) assessments) <i>with professional judgment</i>
C		A > ± 1.0°C P > ± 2.0°C	A > ± 0.5 S.U. P > ± 0.5 S.U.	A > ± 2 mgL ⁻¹ P > ± 2 mgL ⁻¹	A > 30% P > 30%	A > ± 10% P > ± 15%	Absolute difference between log-transformed values P > 0.8 log	Void data. Not used for 303(d) and 305(b) assessments
D		Missing Data	Missing Data	Missing Data	Missing Data	Missing Data	Missing Data	Missing Data
E	No QAPP provided	No Precision Checks	Any Method No Precision Checks	Any Method No Precision Checks or A ≤ ± 2 mgL ⁻¹ P ≤ ± 2 mgL ⁻¹	Any Method No precision checks	Meter without routine calibration No precision checks	Any Method No precision checks	Informational purposes only
F	See accompanying notes							

Data Validation Criteria for Water Quality Parameters Measured in the Field

Notes:

QA definitions of Data Quality Levels

- A+** – Data of known Quality; collected by DEQ; meets QC limits established in the QAPP.
- A** – Data of known Quality; submitted by entities outside of DEQ; meets QC limits established in a *DEQ-approved* QAPP.
- B** – Data of known *but lesser* Quality; data may not meet established QC but is within marginal acceptance criteria; or data value may be accurate, however controls used to measure Data Quality Objective elements failed (e.g., batch failed to meet blank QC limit); the data may be useful in limited situations or in supporting other, higher quality data.
- C** – Data of unacceptable Quality; data are discarded (Void) typically in response to analytical failure.
- D** – Incomplete data; no sample collected or no reportable results, typically due to sampling failure.
- E** – Data of unknown quality or known to be of poor quality; no QA information is available, data could be valid, however, no evidence is available to prove either way. Data is provided for Educational Use Only.
- F** – Exceptional Event; "A" quality data (data is of known quality), but not representative of sampling conditions as required by the project plan. (e.g., a continuous water quality monitor intended to collect background environmental conditions collects a sample impacted by a fire that created anomalous conditions to the environment).

Data Quality Level Grading Criteria:

- A** = Accuracy as determined by comparison with standards, e.g., during equipment calibration or pre- and post-deployment checks
- P** = Precision as determined by replicate measurements, e.g., during field duplicates, field audits, or split samples

Statistics for **turbidity**, **conductivity**, and **bacteria** are concentration-dependent; thus low-concentration B level data may be considered acceptable for all uses.

LASAR	Date	Time	Temp	pH	SpCond	DO	DO Sat	Chl
10000	8/5/2014	11:00	18.2	7.8	114	11.1	117%	ug/L
10000	8/5/2014	11:15	18.2	8.2	114	11.2	119%	5.0
10000	8/5/2014	11:30	18.3	8.4	114	11.2	119%	4.3
10000	8/5/2014	11:45	18.4	8.5	114	11.3	121%	3.4
10000	8/5/2014	12:00	18.5	8.6	114	11.4	121%	4.0
10000	8/5/2014	12:15	18.6	8.6	114	11.4	122%	3.6
10000	8/5/2014	12:30	18.7	8.7	114	11.5	123%	3.9
10000	8/5/2014	12:45	18.8	8.7	114	11.5	124%	4.5
10000	8/5/2014	13:00	18.9	8.7	114	11.5	124%	4.5
10000	8/5/2014	13:15	19.0	8.7	114	11.6	125%	4.0
10000	8/5/2014	13:30	19.2	8.8	114	11.6	126%	4.3
10000	8/5/2014	13:45	19.3	8.8	114	11.6	126%	3.7
10000	8/5/2014	14:00	19.4	8.8	114	11.6	126%	4.6
10000	8/5/2014	14:15	19.5	8.8	114	11.6	127%	3.6
10000	8/5/2014	14:30	19.6	8.9	114	11.6	127%	3.8
10000	8/5/2014	14:45	19.7	8.9	114	11.6	127%	3.5
10000	8/5/2014	15:00	19.8	8.9	114	11.6	127%	3.6
10000	8/5/2014	15:15	19.9	8.9	114	11.6	127%	4.6
10000	8/5/2014	15:30	20.0	8.9	114	11.6	127%	3.9
10000	8/5/2014	15:45	20.0	8.9	114	11.5	127%	4.1
10000	8/5/2014	16:00	20.1	8.9	114	11.5	127%	4.1
10000	8/5/2014	16:15	20.2	8.9	115	11.4	126%	4.0
10000	8/5/2014	16:30	20.2	9.0	115	11.4	126%	4.9
10000	8/5/2014	16:45	20.2	8.9	115	11.3	125%	4.0
10000	8/5/2014	17:00	20.3	9.0	115	11.2	124%	4.7
10000	8/5/2014	17:15	20.3	9.0	115	11.2	124%	4.6
10000	8/5/2014	17:30	20.3	9.0	115	11.1	123%	5.0
10000	8/5/2014	17:45	20.3	8.9	115	11.0	122%	4.6
10000	8/5/2014	18:00	20.3	9.0	115	10.9	121%	5.1
10000	8/5/2014	18:15	20.2	8.9	115	10.7	118%	6.0
10000	8/5/2014	18:30	20.2	8.9	115	10.6	117%	6.4
10000	8/5/2014	18:45	20.2	8.9	115	10.6	117%	6.6
10000	8/5/2014	19:00	20.2	8.9	115	10.5	115%	7.2
10000	8/5/2014	19:15	20.1	8.9	115	10.4	114%	7.3
10000	8/5/2014	19:30	20.1	8.9	115	10.3	113%	6.5
10000	8/5/2014	19:45	20.1	8.9	115	10.2	112%	7.0
10000	8/5/2014	20:00	20.0	8.9	115	10.1	111%	6.5
10000	8/5/2014	20:15	20.0	8.8	115	10.0	110%	6.8
10000	8/5/2014	20:30	19.9	8.8	116	9.9	108%	7.5
10000	8/5/2014	20:45	19.9	8.8	116	9.8	107%	7.1
10000	8/5/2014	21:00	19.8	8.8	116	9.7	106%	7.2
10000	8/5/2014	21:15	19.7	8.7	116	9.6	105%	6.8
10000	8/5/2014	21:30	19.7	8.7	116	9.5	104%	6.7
10000	8/5/2014	21:45	19.6	8.7	116	9.4	103%	7.0
10000	8/5/2014	22:00	19.6	8.7	116	9.4	102%	7.5
10000	8/5/2014	22:15	19.5	8.6	116	9.3	101%	7.4
10000	8/5/2014	22:30	19.4	8.6	116	9.3	101%	7.4
10000	8/5/2014	22:45	19.3	8.5	116	9.2	100%	7.8
10000	8/5/2014	23:00	19.3	8.5	116	9.2	99%	7.6
10000	8/5/2014	23:15	19.2	8.5	117	9.2	99%	8.5
10000	8/5/2014	23:30	19.1	8.4	116	9.1	99%	7.3

10000	8/5/2014	23:45	19.0	8.4	116	9.1	98%	7.8
10000	8/6/2014	0:00	18.9	8.4	117	9.1	98%	7.8
10000	8/6/2014	0:15	18.9	8.3	117	9.1	98%	7.8
10000	8/6/2014	0:30	18.8	8.3	117	9.1	97%	7.0
10000	8/6/2014	0:45	18.7	8.2	117	9.1	97%	8.0
10000	8/6/2014	1:00	18.6	8.2	117	9.1	97%	7.9
10000	8/6/2014	1:15	18.5	8.1	117	9.0	97%	7.8
10000	8/6/2014	1:30	18.5	8.1	117	9.0	96%	8.0
10000	8/6/2014	1:45	18.4	8.0	117	9.0	96%	7.1
10000	8/6/2014	2:00	18.3	8.0	117	9.0	96%	7.9
10000	8/6/2014	2:15	18.2	7.9	117	9.0	96%	8.3
10000	8/6/2014	2:30	18.2	7.9	117	9.0	96%	7.8
10000	8/6/2014	2:45	18.1	7.9	117	9.0	96%	7.8
10000	8/6/2014	3:00	18.0	7.8	117	9.0	96%	7.9
10000	8/6/2014	3:15	18.0	7.8	117	9.1	96%	8.2
10000	8/6/2014	3:30	17.9	7.8	117	9.1	96%	7.8
10000	8/6/2014	3:45	17.9	7.8	117	9.1	96%	8.1
10000	8/6/2014	4:00	17.8	7.7	117	9.1	96%	7.5
10000	8/6/2014	4:15	17.7	7.7	117	9.1	96%	8.5
10000	8/6/2014	4:30	17.6	7.7	117	9.1	95%	7.7
10000	8/6/2014	4:45	17.6	7.7	117	9.1	95%	8.8
10000	8/6/2014	5:00	17.5	7.7	117	9.1	95%	9.2
10000	8/6/2014	5:15	17.4	7.7	117	9.1	95%	8.6
10000	8/6/2014	5:30	17.4	7.7	117	9.2	95%	8.2
10000	8/6/2014	5:45	17.3	7.6	117	9.2	95%	8.2
10000	8/6/2014	6:00	17.2	7.6	116	9.2	96%	10.0
10000	8/6/2014	6:15	17.2	7.6	116	9.2	96%	7.8
10000	8/6/2014	6:30	17.1	7.6	116	9.3	96%	8.5
10000	8/6/2014	6:45	17.1	7.6	116	9.3	96%	7.1
10000	8/6/2014	7:00	17.0	7.6	116	9.4	97%	8.0
10000	8/6/2014	7:15	17.0	7.7	116	9.4	97%	7.4
10000	8/6/2014	7:30	17.0	7.7	116	9.4	98%	8.6
10000	8/6/2014	7:45	17.0	7.7	116	9.5	98%	7.5
10000	8/6/2014	8:00	17.0	7.7	116	9.7	101%	7.5
10000	8/6/2014	8:15	17.0	7.8	116	9.9	102%	6.2
10000	8/6/2014	8:30	17.1	7.9	116	10.0	103%	5.4
10000	8/6/2014	8:45	17.1	7.9	116	10.1	105%	5.4
10000	8/6/2014	9:00	17.1	8.0	116	10.2	106%	5.4
10000	8/6/2014	9:15	17.2	8.0	116	10.4	108%	5.1
10000	8/6/2014	9:30	17.3	8.1	115	10.6	110%	4.2
10000	8/6/2014	9:45	17.4	8.2	115	10.7	112%	4.9
10000	8/6/2014	10:00	17.5	8.3	116	10.8	113%	5.5
10000	8/6/2014	10:15	17.6	8.3	116	10.9	115%	5.2
10000	8/6/2014	10:30	17.7	8.4	116	11.0	116%	3.8
10000	8/6/2014	10:45	17.8	8.4	115	11.1	117%	4.1
10000	8/6/2014	11:00	17.8	8.5	116	11.2	118%	4.2
10000	8/6/2014	11:15	17.9	8.5	115	11.3	119%	4.0
10000	8/6/2014	11:30	18.0	8.5	115	11.3	120%	4.4
10000	8/6/2014	11:45	18.1	8.6	116	11.4	120%	3.7
10000	8/6/2014	12:00	18.2	8.6	116	11.5	122%	3.8
10000	8/6/2014	12:15	18.3	8.6	115	11.5	123%	3.8
10000	8/6/2014	12:30	18.5	8.7	115	11.6	123%	4.3

10000	8/6/2014	12:45	18.6	8.7	115	11.6	124%	4.0
10000	8/6/2014	13:00	18.7	8.7	115	11.6	125%	3.6
10000	8/6/2014	13:15	18.8	8.7	115	11.7	125%	4.0
10000	8/6/2014	13:30	18.9	8.8	115	11.7	126%	4.0
10000	8/6/2014	13:45	19.0	8.8	115	11.7	126%	3.5
10000	8/6/2014	14:00	19.1	8.8	115	11.7	127%	4.7
10000	8/6/2014	14:15	19.2	8.8	115	11.7	127%	4.2
10000	8/6/2014	14:30	19.3	8.8	116	11.7	127%	4.1
10000	8/6/2014	14:45	19.3	8.9	116	11.7	127%	4.8
10000	8/6/2014	15:00	19.4	8.9	116	11.7	127%	4.9
10000	8/6/2014	15:15	19.5	8.9	116	11.7	128%	3.8
10000	8/6/2014	15:30	19.5	8.9	116	11.7	128%	3.0
10000	8/6/2014	15:45	19.6	8.9	116	11.7	128%	3.3
10000	8/6/2014	16:00	19.7	8.9	116	11.6	127%	3.2
10000	8/6/2014	16:15	19.7	8.9	116	11.6	127%	4.9
10000	8/6/2014	16:30	19.7	8.9	116	11.5	126%	3.9
10000	8/6/2014	16:45	19.8	8.9	116	11.5	126%	4.1
10000	8/6/2014	17:00	19.8	9.0	116	11.4	125%	4.0
10000	8/6/2014	17:15	19.8	9.0	116	11.4	125%	4.5
10000	8/6/2014	17:30	19.8	9.0	116	11.3	124%	5.0
10000	8/6/2014	17:45	19.8	9.0	116	11.2	123%	5.3
10000	8/6/2014	18:00	19.8	8.9	117	11.1	122%	4.9
10000	8/6/2014	18:15	19.7	8.9	117	10.9	119%	5.2
10000	8/6/2014	18:30	19.7	8.9	117	10.8	118%	6.3
10000	8/6/2014	18:45	19.7	8.9	117	10.7	116%	6.1
10000	8/6/2014	19:00	19.6	8.9	117	10.6	115%	5.8
10000	8/6/2014	19:15	19.6	8.9	117	10.5	114%	6.9
10000	8/6/2014	19:30	19.6	8.9	117	10.4	113%	7.1
10000	8/6/2014	19:45	19.5	8.9	117	10.3	112%	6.7
10000	8/6/2014	20:00	19.5	8.9	118	10.2	111%	6.3
10000	8/6/2014	20:15	19.5	8.8	118	10.1	110%	6.6
10000	8/6/2014	20:30	19.4	8.8	118	10.0	109%	6.9
10000	8/6/2014	20:45	19.4	8.8	118	9.9	108%	6.0
10000	8/6/2014	21:00	19.3	8.8	118	9.8	106%	6.4
10000	8/6/2014	21:15	19.3	8.7	118	9.7	105%	6.2
10000	8/6/2014	21:30	19.2	8.7	118	9.6	104%	7.5
10000	8/6/2014	21:45	19.1	8.6	118	9.6	103%	6.9
10000	8/6/2014	22:00	19.1	8.6	119	9.5	102%	6.5
10000	8/6/2014	22:15	19.0	8.6	119	9.4	102%	7.0
10000	8/6/2014	22:30	19.0	8.6	119	9.4	101%	7.0
10000	8/6/2014	22:45	18.9	8.5	119	9.4	101%	7.4
10000	8/6/2014	23:00	18.8	8.5	119	9.3	100%	6.9
10000	8/6/2014	23:15	18.8	8.4	119	9.3	100%	7.6
10000	8/6/2014	23:30	18.7	8.4	119	9.3	99%	7.6
10000	8/6/2014	23:45	18.6	8.3	119	9.2	99%	7.2
10000	8/7/2014	0:00	18.6	8.3	119	9.2	98%	8.2
10000	8/7/2014	0:15	18.5	8.3	119	9.2	98%	8.1
10000	8/7/2014	0:30	18.4	8.2	119	9.2	98%	6.8
10000	8/7/2014	0:45	18.4	8.2	119	9.2	98%	7.9
10000	8/7/2014	1:00	18.3	8.1	119	9.1	97%	7.5
10000	8/7/2014	1:15	18.2	8.1	119	9.1	97%	8.4
10000	8/7/2014	1:30	18.2	8.1	118	9.1	97%	8.0

10000	8/7/2014	1:45	18.1	8.0	118	9.1	97%	8.4
10000	8/7/2014	2:00	18.0	8.0	119	9.1	96%	7.6
10000	8/7/2014	2:15	17.9	7.9	119	9.1	96%	7.1
10000	8/7/2014	2:30	17.9	7.9	119	9.1	96%	8.1
10000	8/7/2014	2:45	17.8	7.9	119	9.1	96%	7.4
10000	8/7/2014	3:00	17.7	7.8	119	9.1	96%	7.7
10000	8/7/2014	3:15	17.7	7.8	119	9.2	96%	7.3
10000	8/7/2014	3:30	17.6	7.8	119	9.1	96%	6.9
10000	8/7/2014	3:45	17.5	7.7	119	9.2	96%	7.3
10000	8/7/2014	4:00	17.4	7.7	119	9.2	96%	7.4
10000	8/7/2014	4:15	17.4	7.7	119	9.2	96%	7.9
10000	8/7/2014	4:30	17.3	7.7	119	9.2	96%	7.5
10000	8/7/2014	4:45	17.3	7.7	119	9.2	96%	8.1
10000	8/7/2014	5:00	17.2	7.7	119	9.2	96%	7.0
10000	8/7/2014	5:15	17.1	7.6	119	9.2	96%	6.9
10000	8/7/2014	5:30	17.1	7.6	119	9.2	96%	7.4
10000	8/7/2014	5:45	17.0	7.6	118	9.2	96%	8.9
10000	8/7/2014	6:00	17.0	7.6	118	9.3	96%	8.2
10000	8/7/2014	6:15	16.9	7.6	118	9.3	96%	7.4
10000	8/7/2014	6:30	16.9	7.6	118	9.3	96%	7.9
10000	8/7/2014	6:45	16.8	7.6	118	9.4	97%	8.1
10000	8/7/2014	7:00	16.8	7.7	118	9.4	97%	6.7
10000	8/7/2014	7:15	16.8	7.6	118	9.5	97%	6.8
10000	8/7/2014	7:30	16.7	7.7	118	9.5	98%	7.5
10000	8/7/2014	7:45	16.7	7.7	117	9.6	99%	7.3
10000	8/7/2014	8:00	16.7	7.7	117	9.8	100%	7.3
10000	8/7/2014	8:15	16.8	7.8	117	9.9	102%	6.1
10000	8/7/2014	8:30	16.8	7.9	117	10.1	104%	5.1
10000	8/7/2014	8:45	16.8	7.9	117	10.2	105%	5.6
10000	8/7/2014	9:00	16.9	8.0	117	10.3	106%	4.9
10000	8/7/2014	9:15	16.9	8.0	117	10.5	108%	4.6
10000	8/7/2014	9:30	17.0	8.1	117	10.6	110%	4.3
10000	8/7/2014	9:45	17.1	8.2	117	10.8	112%	3.7
10000	8/7/2014	10:00	17.2	8.3	116	10.9	113%	4.1
10000	8/7/2014	10:15	17.3	8.3	116	11.0	115%	3.9
10000	8/7/2014	10:30	17.4	8.4	116	11.1	116%	4.1
10000	8/7/2014	10:45	17.5	8.4	117	11.2	117%	4.1
10000	8/7/2014	11:00	17.5	8.5	117	11.3	118%	4.3
10000	8/7/2014	11:15	17.6	8.5	116	11.3	119%	4.3
10000	8/7/2014	11:30	17.7	8.5	117	11.4	120%	4.0
10000	8/7/2014	11:45	17.8	8.6	117	11.5	121%	3.9
10000	8/7/2014	12:00	17.9	8.6	117	11.5	122%	4.3
10000	8/7/2014	12:15	18.0	8.6	116	11.6	123%	3.6
10000	8/7/2014	12:30	18.2	8.7	116	11.6	123%	3.9
10000	8/7/2014	12:45	18.3	8.7	116	11.7	124%	3.6
10000	8/7/2014	13:00	18.4	8.7	116	11.7	125%	3.3
10000	8/7/2014	13:15	18.5	8.7	117	11.8	126%	3.8
10000	8/7/2014	13:30	18.6	8.8	117	11.8	126%	4.0
10000	8/7/2014	13:45	18.7	8.8	117	11.8	127%	3.5
10000	8/7/2014	14:00	18.8	8.8	117	11.8	127%	4.1
10000	8/7/2014	14:15	18.9	8.8	117	11.8	127%	3.6
10000	8/7/2014	14:30	18.9	8.9	117	11.8	127%	3.3

10000	8/7/2014	14:45	19.0	8.9	117	11.8	128%	3.7
10000	8/7/2014	15:00	19.1	8.9	117	11.8	128%	3.4
10000	8/7/2014	15:15	19.2	8.9	117	11.8	128%	3.5
10000	8/7/2014	15:30	19.3	8.9	117	11.8	128%	3.9
10000	8/7/2014	15:45	19.3	8.9	117	11.8	128%	3.9
10000	8/7/2014	16:00	19.4	8.9	117	11.7	127%	4.1
10000	8/7/2014	16:15	19.5	9.0	117	11.7	127%	3.9
10000	8/7/2014	16:30	19.5	9.0	117	11.6	126%	3.0
10000	8/7/2014	16:45	19.5	9.0	117	11.5	126%	4.3
10000	8/7/2014	17:00	19.5	9.0	117	11.5	125%	4.3
10000	8/7/2014	17:15	19.6	9.0	117	11.4	125%	4.4
10000	8/7/2014	17:30	19.6	9.0	118	11.3	124%	3.6
10000	8/7/2014	17:45	19.6	9.0	117	11.3	123%	4.7
10000	8/7/2014	18:00	19.6	9.0	117	11.2	122%	4.8
10000	8/7/2014	18:15	19.6	9.0	118	11.0	119%	5.4
10000	8/7/2014	18:30	19.6	9.0	117	10.8	118%	5.8
10000	8/7/2014	18:45	19.5	8.9	118	10.7	117%	6.1
10000	8/7/2014	19:00	19.5	8.9	118	10.6	116%	5.5
10000	8/7/2014	19:15	19.5	8.9	118	10.5	114%	6.0
10000	8/7/2014	19:30	19.5	8.9	118	10.4	113%	5.9
10000	8/7/2014	19:45	19.5	8.9	118	10.3	112%	6.4
10000	8/7/2014	20:00	19.4	8.9	118	10.2	111%	6.5
10000	8/7/2014	20:15	19.4	8.9	118	10.1	110%	6.4
10000	8/7/2014	20:30	19.4	8.8	118	10.0	108%	6.6
10000	8/7/2014	20:45	19.4	8.8	118	9.9	107%	7.0
10000	8/7/2014	21:00	19.3	8.8	118	9.8	106%	15.3
10000	8/7/2014	21:15	19.2	8.8	118	9.7	105%	7.8
10000	8/7/2014	21:30	19.1	8.7	119	9.6	104%	6.0
10000	8/7/2014	21:45	19.1	8.7	119	9.5	103%	8.0
10000	8/7/2014	22:00	19.0	8.6	119	9.4	102%	7.2
10000	8/7/2014	22:15	18.9	8.6	119	9.4	101%	7.2
10000	8/7/2014	22:30	18.9	8.6	119	9.3	100%	6.4
10000	8/7/2014	22:45	18.8	8.5	119	9.3	100%	7.2
10000	8/7/2014	23:00	18.7	8.5	120	9.3	99%	7.2
10000	8/7/2014	23:15	18.7	8.3	119	9.2	99%	7.6
10000	8/7/2014	23:30	18.6	8.4	119	9.2	99%	7.4
10000	8/7/2014	23:45	18.5	8.4	119	9.2	98%	7.1
10000	8/8/2014	0:00	18.5	8.3	119	9.2	98%	7.2
10000	8/8/2014	0:15	18.4	8.3	119	9.2	98%	6.1
10000	8/8/2014	0:30	18.4	8.2	119	9.1	97%	7.0
10000	8/8/2014	0:45	18.3	8.2	119	9.1	97%	6.9
10000	8/8/2014	1:00	18.2	8.2	119	9.1	97%	7.3
10000	8/8/2014	1:15	18.2	8.1	119	9.1	97%	6.8
10000	8/8/2014	1:30	18.1	8.1	119	9.1	96%	7.6
10000	8/8/2014	1:45	18.1	8.0	119	9.1	96%	7.6
10000	8/8/2014	2:00	18.0	8.0	120	9.1	96%	7.2
10000	8/8/2014	2:15	17.9	7.9	120	9.1	96%	7.2
10000	8/8/2014	2:30	17.9	7.9	119	9.1	96%	8.3
10000	8/8/2014	2:45	17.8	7.9	120	9.1	96%	7.1
10000	8/8/2014	3:00	17.7	7.8	119	9.1	96%	7.3
10000	8/8/2014	3:15	17.7	7.8	119	9.1	96%	8.2
10000	8/8/2014	3:30	17.6	7.8	119	9.1	96%	7.1

