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Precision statement for replicate samples drawn from a single Niskin bottle:

The mean difference for Oxygen:Dissolved:Bottle:Volume for the range 0.249 to 7.187 ml/l was 0.009,
k = 50 (2 outliers removed) where k is the number of duplicates.

Precision analysis and the determination of outliers

Precision was determined by analyzing replicate samples drawn from one Niskin.

Outliers are discarded on the basis of Chauvenet's criteria. The statistic is calculated using the following formula:

$$\sigma = \left[\frac{1}{n-1} \sum_1^n (x_i - x_m)^2 \right]^{\frac{1}{2}}$$

The maximum deviation, dmax, is compared with the individual residuals from the original concentrations.

If a replicate's residual is greater than dmax, this reading can be rejected based upon Chauvenet's criterion.

Duplicate samples from a single Niskin bottle

Event Number	Sample Number	Station	Pressure dbar	Oxy:Dis 1 ml/l	Oxy:Dis 2 ml/l	Rejected yes / no	Comment
7	25	P2	104.2	3.845	3.849		
13	41	P8	2003.5	1.410	1.414		
13	49	P8	249.5	2.509	2.512		
13	57	P8	25.2	6.778	6.773		
22	96	P12	3002.5	2.284	2.272		
22	101	P12	1000.9	0.249	0.253		
22	109	P12	150.9	3.824	3.821		
30	166	P16	2001.8	1.384	1.395		
30	173	P16	300.7	2.231	2.210		
30	176	P16	175.6	4.064	4.072		
30	180	P16	75.1	6.886	6.881		
42	245	P26	3998.9	3.167	3.165		
42	251	P26	1249.6	0.479	0.487		
42	257	P26	249.6	1.700	1.722		
42	261	P26	125.4	5.003	5.012		
54	308	PA-006	9.9	7.159	7.149		
54	309	PA-006	5.7	7.150	7.177		
54	310	PA-006	2.7	7.146	7.151		
56	311	PA-006	4.6	7.187	7.152	yes	Average still used, no known problem
56	312	PA-006	2.8	7.154	7.152		
62	339	P20	3502.9	2.870	2.857		
62	346	P20	999.7	0.328	0.342		
62	355	P20	125.8	5.751	5.742		
62	361	P20	4.3	7.084	7.071		
74	389	P4	1251.8	0.438	0.434		
74	401	P4	74.8	6.689	6.681		

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Duplicate Niskins at the same pressure

Note: The precision statement for samples drawn from duplicate Niskin bottles is not calculated since these values are not true duplicates. They are presented here as information only, mainly as a way to further identify problem samples.

Event Number	Sample Number	Station	Nominal Pressure dbar	Oxy:Dis 1 ml/l	Oxy:Dis 2 ml/l	Rejected yes / no	Comment
7	27 / 28	P2	75	4.902	4.804	yes	Both values kept, no known problem.
22	95 / 96	P12	3000	2.279	2.278		
30	162 / 163	P16	3500	2.698	2.693		
62	339 / 340	P20	3500	2.868	2.864		
75	388 / 389	P4	1250	0.426	0.436		