2009-09 Oxygen duplicates

Precision statement for replicate samples drawn from a single Niskin bottle:
The mean difference for Oxygen:Dissolved:Bottle:Volume for the range 0.045 to 6.769 ml/l was 0.009,
k = 7 (1 outlier removed) where k is the number of pairs of duplicates

Precision calculation for duplicate samples:
Precision was determined by analyzing replicate samples drawn from one Niskin.
Pooled standard deviation of pairs of samples (Sp) was calculated by:

$$Sp = SQRT\{sum\ (d*d)/2k\}$$

where k is the number of pairs and d is the difference between pairs.

Determination of outliers
Outliers are discarded on the basis of Chauvenet's criteria. The statistic is calculated by the difference
between the outlier and the mean, divided by the stdev.
If this absolute value is greater than the critical value of the Chauvenet criterion for the given n,
the datapoint can be discarded.

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
1	4	Si03	150.2	0.066	0.045	yes	
3	19	P2	51.8	3.539	3.539		
11	72	P4	600.7	0.336	0.350		
20	144	P8	75.4	6.763	6.769		
25	168	P12	150.7	5.197	5.219	no	
43	291	P16	149.8	5.757	5.766		
58	381	P20	150.5	4.406	4.422		
71	447	P26	249.9	2.314	2.313		

Precision statement for samples drawn from duplicate Niskin bottles closed at same pressure:
The mean difference for Oxygen:Dissolved:Bottle:Volume for the range 0.326 to 2.729 ml/l was 0.008,
k = 5 (0 outlier removed) where K is the number of duplicates.

Duplicate Niskins at the same pressure

Event Number	Sample Number	Station	Nominal Pressure dbar	Oxy:Dis 1 ml/l	Oxy:Dis 2 ml/l	Rejected yes / no	Comment
3	15 / 16	P2	100	2.632	2.627		
11	68 / 69	P4	1250	0.332	0.326		
20	134 / 135	P8	600	0.362	0.347	no	
25	154 / 155	P12	3000	2.316	2.301		
43	276 / 277	P16	3500	2.723	2.729		

Note: even though the precision statement for samples drawn from duplicate Niskin bottles (not true duplicates)
is calculated using the same formula as the precision statement for duplicates samples drawn
from one single Niskin, this process is mainly used to identify problem samples and is not being
used as a measure of analysis precision.