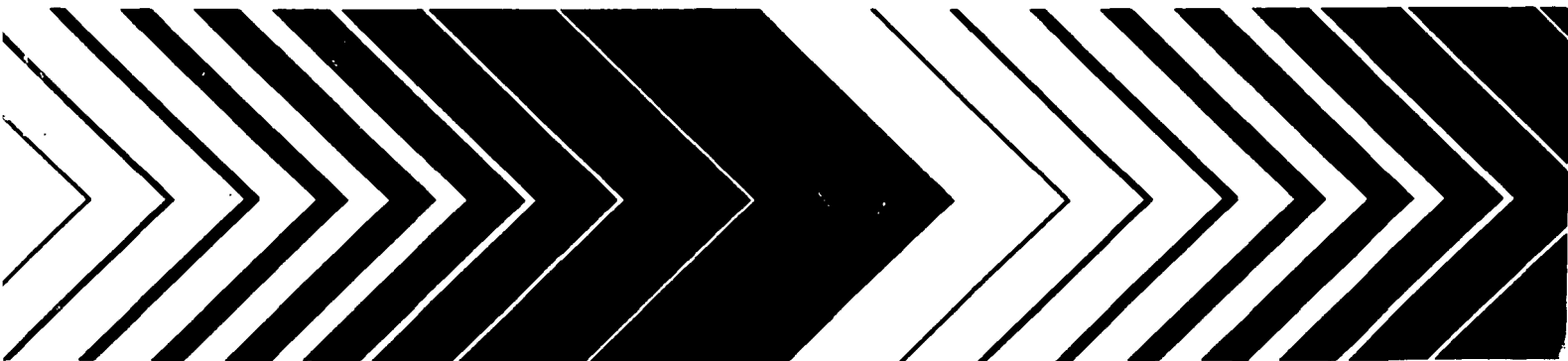


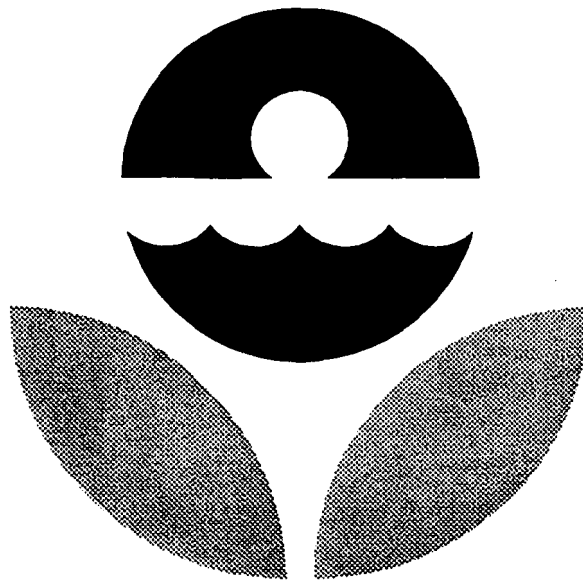


Gamma in Water Intercomparison Study

A Statistical Evaluation of the June 5, 1992 Data



Gamma in Water
Intercomparison Study
June 5, 1992



Environmental Protection Agency
Environmental Monitoring Systems Laboratory
Las Vegas, Nevada



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL MONITORING SYSTEMS LABORATORY-LAS VEGAS
P.O. BOX 93478
LAS VEGAS, NEVADA 89193-3478
(702/798-2100)

Dear Participant,

Enclosed are the results of the Nuclear Radiation Assessment Division (EMSL-LV) Intercomparison Study for *Gamma in Water; June 5, 1992*.

Please take a few minutes to review this report and the analytical data your laboratory submitted to us. If there are any apparent discrepancies, please notify us immediately.

We encourage you to make use of the computer-automated data-entry system that has been in place for some time now. As the number of participants increases, and it becomes unrealistic for us to receive results by mail or FAX, the computer system will be our only avenue for accepting data.

If you have any questions or comments, please send a message via the data-entry system or contact Frank Novielli at 702/798-2159 or Patricia Honsa at 702/798-2141.

Sincerely,

A handwritten signature in cursive script that reads "Frank Novielli".

Frank Novielli
Senior Chemist
Radioanalysis Branch

Enclosure

NOTICE

This material has been funded wholly by the U.S. Environmental Protection Agency. It has been subject to the Agency's review, and it has been approved for publication as an EPA document.

The following pages consist of separate sections for each of the nuclides in this study with four parts per section. After the first, each part is separated from the next by a new page or a thick horizontal bar. The first page of each section is a statistical summary for the nuclide and starts with a statement of the known value, the control limits, and the warning limits.

The warning limits are placed at two normalized standard deviations above and below the known value and the control limits are three normalized standard deviations above and below the known value. If you keep control charts, these values will be useful for anticipating problems with the accuracy of your analytical methods.

The coin shaped pie chart at the top of the summary page shows the fate of all the samples sent out in number and percentage terms. The pie chart starts at the top and rotates clockwise. The first sector represents those participants who submitted analytical results within both the warning and control limits. The next sector represents those who are in the warning region but not out of control. The third sector represents those who are out of control, but have passed the the outlier test. The fourth sector represents those who have failed the outlier test. The last sector represents those participants who have failed to respond properly. This is the case if no analytical results were returned, or less than three determinations were reported, or if the results were received too late. The reeding on the edge of the coin is spaced at one percent intervals, and the sector shading becomes darker as the data reliability decreases. Sectors with zero width are not shown.

The table in the center shows a number of statistical quantities calculated from the submitted data based on the mean and median values in relation to the known value, both before and after outlier removal. The lower pie chart uses the same construction as the upper chart and shows the distribution of properly submitted data in terms of deviation from the known value divided into sectors representing one, two, three, and greater than three normalized standard deviations.

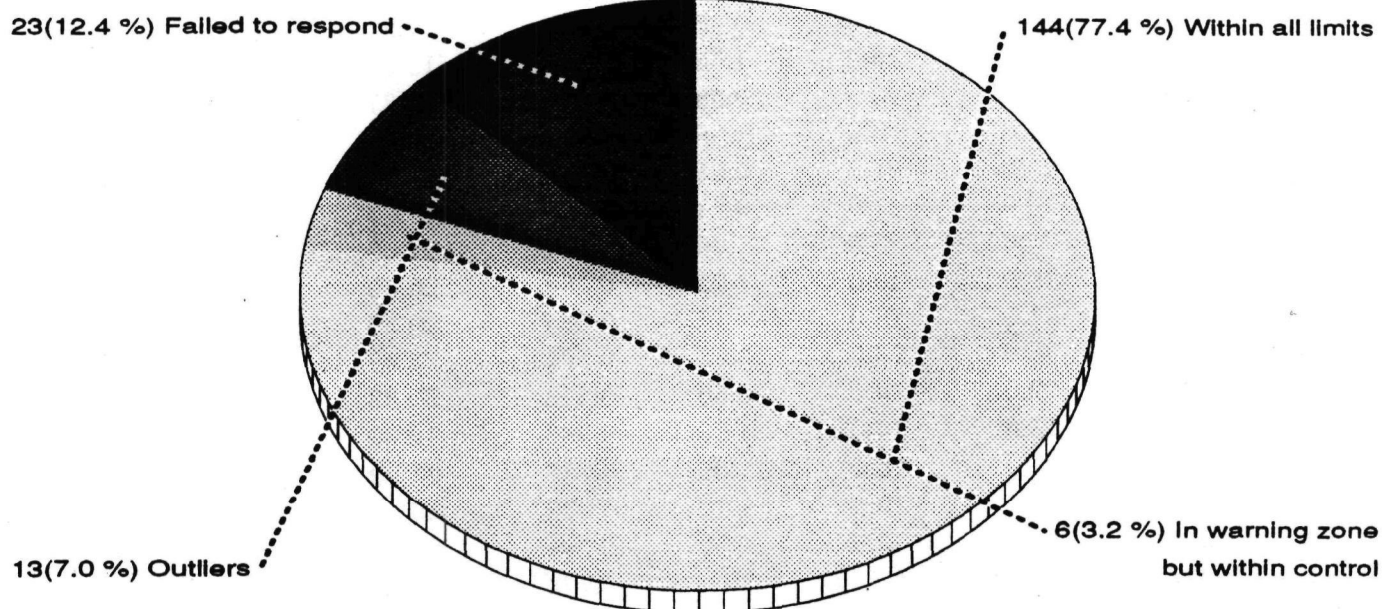
The second part is an alphabetical listing, in lab-code order, of submitted data and several calculated quantities. An entry that is shaded has been rejected because of one of the reasons listed above or failure of the outlier test. The fifth and sixth columns are a measure of laboratory precision. The Range analysis is a normalized value that you may use to keep precision control charts. If this value is between 2.0 and 3.0, your analytical process precision is in the warning zone; if it exceeds 3.0 it is out of control. The eighth and ninth columns are the differences from the mean of all non-outliers and from the known value, respectively. A tag symbol may appear in the last column. Each page with tags has a symbol definition summary at the bottom. If there is no tag symbol, the data is within the control limits, but it may be in the warning zone.

The third part is a three-column listing of result average, tag symbol, and lab-code in average order excluding those labs not responding properly. In this order, all outliers and out-of-control results appear at the top or bottom of the list.

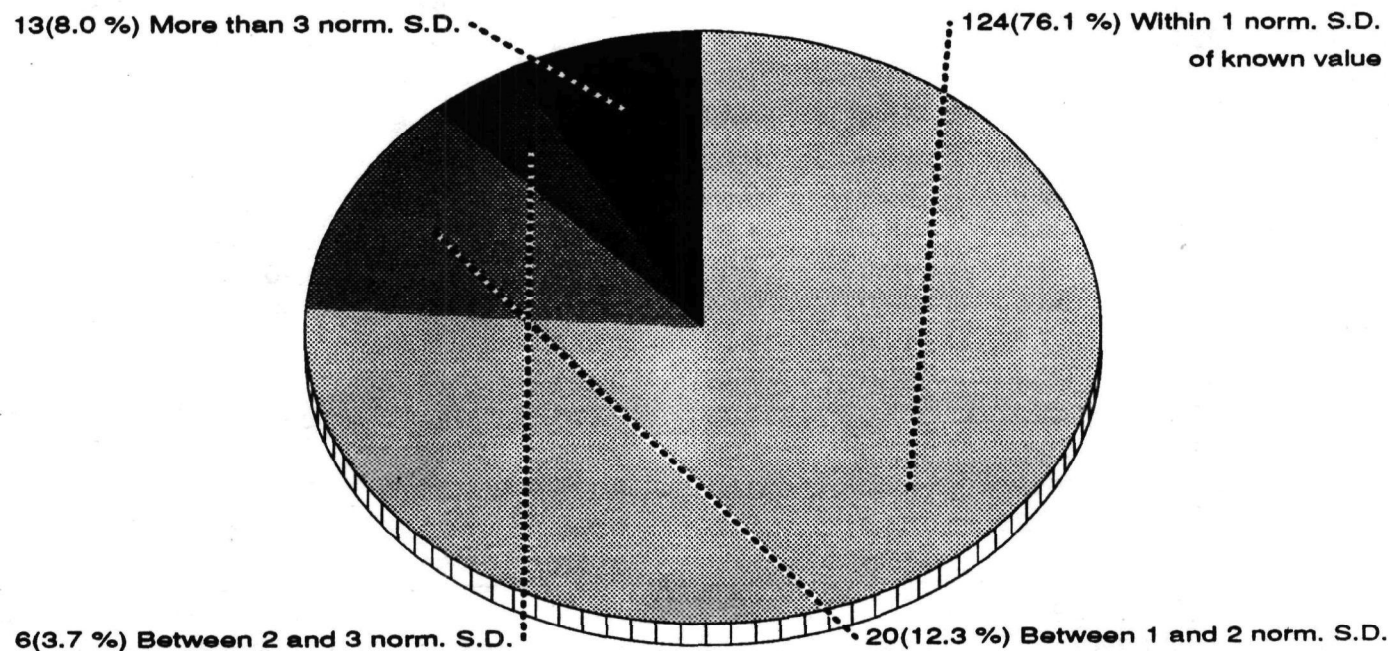
The last part is two bar chart displays showing frequency distributions of responding participants. The first chart places the known value at the center and a bar at each 0.2 unit of expected precision. The second chart places the mean of the reported measurements at the center and a bar at each 0.2 unit of standard deviation. In both cases, a bar includes those results within 0.1 unit up to the maximum of six. Any results more than six units from the center value are shown cumulatively by a shaded bar one past the sixth unit. If the central tendency of the known value distribution falls away from the center, an error in accuracy is indicated. If the distribution is broad, poor precision is indicated. The mean value distribution is similar but uses the average and standard deviation of reported results as its basis.

Cobalt-60**Statistical Summary****186 Participants**

The known value of this nuclide is 20.0 pCi/l with an expected precision of 5.0; the control limits are 11.3 to 28.7; the warning regions are 11.3 to 14.2 and 25.8 to 28.7



Statistic	Respondents	Non-outliers
Mean	42.35	Grand Avg 20.61
Std. Dev.	241.15	2.28
Variance	58151.94	5.19
% Coef. of Var.	569.39	11.06
% deviation of mean from known value	111.76	3.04
Norm. dev. of mean from known value	0.09	0.27
Median	20.67	20.33
% deviation of median from known value	3.33	1.67
Norm. dev. of median from known value	0.00	0.15



Cobalt-60

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
A	21.0	19.0	20.0	1.00	0.236	20.00	-0.21	0.00	
AB									•
AE	17.0	18.0	17.0	0.58	0.118	17.33	-1.13	-0.92	
AF	21.0	20.0	18.0	1.53	0.354	19.67	-0.33	-0.12	
AI	20.0	19.0	20.0	0.58	0.118	19.67	-0.33	-0.12	
AJ	22.0	21.0	22.0	0.58	0.118	21.67	0.37	0.58	
AK	20.0	21.0	21.0	0.58	0.118	20.67	0.02	0.23	
AL	14.0	18.0	21.0	3.51	0.827	17.67	-1.02	-0.81	
AN	25.0	24.0	23.0	1.00	0.236	24.00	1.17	1.39	
AP	22.0	19.0	19.0	1.73	0.354	20.00	-0.21	0.00	
AU	21.0	21.0	19.0	1.15	0.236	20.33	-0.10	0.12	
AW	20.0	25.0	23.0	2.52	0.591	22.67	0.71	0.92	
AY	22.0	22.0	23.0	0.58	0.118	22.33	0.60	0.81	
AZ	13.0	15.0	14.0	1.00	0.236	14.00	-2.29	-2.08	
BA	22.0	21.0	20.0	1.00	0.236	21.00	0.14	0.35	
BB	21.0	19.0	19.0	1.15	0.236	19.67	-0.33	-0.12	
BC	24.0	22.0	19.0	2.52	0.591	21.67	0.37	0.58	
BG	39.0	35.0	46.0	5.57	1.570	40.00	6.72	6.93	×
BH	20.0	21.0	22.0	1.00	0.236	21.00	0.14	0.35	
BK	20.0	19.0	20.0	0.58	0.118	19.67	-0.33	-0.12	
BL	22.0	19.0	20.0	1.53	0.354	20.33	-0.10	0.12	
BM	18.0	19.0	18.0	0.58	0.118	18.33	-0.79	-0.58	
BO	20.0	18.0	21.0	1.53	0.354	19.67	-0.33	-0.12	
BW									•
C	20.0	21.0	20.0	0.58	0.118	20.33	-0.10	0.12	
CA	20.0	20.0	21.0	0.58	0.118	20.33	-0.10	0.12	
CC	19.0	20.0	20.0	0.58	0.118	19.67	-0.33	-0.12	
CE	24.0	22.0	22.0	1.15	0.236	22.67	0.71	0.92	
CJ	22.0	21.0	21.0	0.58	0.118	21.33	0.25	0.46	
CK	20.0	21.0	24.0	2.08	0.473	21.67	0.37	0.58	
CO	22.0	21.0	21.0	0.58	0.118	21.33	0.25	0.46	
CP	22.0	20.0	21.0	1.00	0.236	21.00	0.14	0.35	
CQ	21.0	21.0	20.0	0.58	0.118	20.67	0.02	0.23	
CS	20.0	21.0	21.0	0.58	0.118	20.67	0.02	0.23	
CX	25.0	26.0	25.0	0.58	0.118	25.33	1.64	1.85	
D	20.0	20.0	18.0	1.15	0.236	19.33	-0.44	-0.23	
DD	18.0	19.0	19.0	0.58	0.118	18.67	-0.67	-0.46	
DE	20.0	20.0	20.0	0.00	0.000	20.00	-0.21	0.00	
DG	21.0	27.0	19.0	4.16	0.945	22.33	0.60	0.81	
DH	21.0	22.0	21.0	0.58	0.118	21.33	0.25	0.46	
DJ	138.0	125.0	126.0	7.23	2.020	129.67	37.78	37.99	×
DL	22.0	20.0	20.0	1.15	0.236	20.67	0.02	0.23	
DM	21.0	20.0	20.0	0.58	0.118	20.33	-0.10	0.12	
DO	20.0	21.0	22.0	1.00	0.236	21.00	0.14	0.35	
DR	21.0	22.0	23.0	1.00	0.236	22.00	0.48	0.69	

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Cobalt-60

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
DT	16.0	19.0	18.0	1.53	0.354	17.67	-1.02	-0.81	
E	19.0	21.0	20.0	1.00	0.236	20.00	-0.21	0.00	
EA	20.0	19.0	20.0	0.58	0.118	19.67	-0.33	-0.12	
EB	19.0	19.0	19.0	0.00	0.000	19.00	-0.56	-0.35	
EH	18.0	24.0	21.0	3.00	0.709	21.00	0.14	0.35	
EL	20.0	18.0	20.0	1.15	0.236	19.33	-0.44	-0.23	
EW	19.0	20.0	19.0	0.58	0.118	19.33	-0.44	-0.23	
EX	23.0	22.0	30.0	4.36	0.945	25.00	1.52	1.73	
EZ	72.0	81.0	80.0	4.98	1.120	77.67	19.77	19.98	x
FE	24.0	20.0	18.0	3.06	0.709	20.67	0.02	0.23	
FJ	18.0	18.0	18.0	0.00	0.000	18.00	-0.90	-0.69	
FL	23.0	21.0	19.0	2.00	0.473	21.00	0.14	0.35	
FU	19.0	20.0	20.0	0.58	0.118	19.67	-0.33	-0.12	
FZ	22.0	20.0	20.0	1.15	0.236	20.67	0.02	0.23	
GE	20.0	20.0	22.0	1.15	0.236	20.67	0.02	0.23	
GI	19.0	19.0	18.0	0.58	0.118	18.67	-0.67	-0.46	
GL	20.0	21.0	22.0	1.00	0.236	21.00	0.14	0.35	
HE	19.0	18.0	19.0	0.58	0.118	18.67	-0.67	-0.46	
HI	20.0	21.0	25.0	2.65	0.591	22.00	0.48	0.69	
HJ	24.0	25.0	24.0	0.58	0.118	24.33	1.29	1.50	
HK	21.0	19.0	20.0	1.00	0.236	20.00	-0.21	0.00	
HL	30.0	33.0	32.0	1.53	0.354	31.67	3.88	4.04	x
HP	14.0	13.0	13.0	0.58	0.118	13.33	-2.52	-2.31	
HU									•
I	24.0	20.0	21.0	2.08	0.473	21.67	0.37	0.58	
IA	23.0	23.0	23.0	0.00	0.000	23.00	0.83	1.04	
IC	19.0	22.0	21.0	1.53	0.354	20.67	0.02	0.23	
IU	19.0	20.0	20.0	0.58	0.118	19.67	-0.33	-0.12	
IW	25.0	23.0	26.0	1.53	0.354	24.67	1.41	1.62	
J	21.0	20.0	20.0	0.58	0.118	20.33	-0.10	0.12	
JE	20.0	20.0	20.0	0.00	0.000	20.00	-0.21	0.00	
JG									•
JR	24.0	23.0	23.0	0.58	0.118	23.33	0.94	1.15	
JS	17.0	19.0	15.0	2.00	0.473	17.00	-1.25	-1.04	
JY	22.0	20.0	22.0	1.15	0.236	21.33	0.25	0.46	
K	21.0	20.0	23.0	1.53	0.354	21.33	0.25	0.46	
KF									•
KL	20.0	21.0	19.0	1.00	0.236	20.00	-0.21	0.00	
KM	20.0	19.0	18.0	1.00	0.236	19.00	-0.56	-0.35	
KX	22.0	21.0	20.0	1.00	0.236	21.00	0.14	0.35	
L	23.0	26.0	21.0	2.52	0.591	23.33	0.94	1.15	
LA									•
LE	19.0	16.0	29.0	6.81	2.020	21.33	0.25	0.46	
LF	20.0	21.0	21.0	0.58	0.118	20.67	0.02	0.23	
LM									•

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Cobalt-60

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
LR	29.0	30.0	32.0	1.53	0.354	30.33	3.37	3.58	×
LT	19.0	19.0	20.0	0.58	0.118	19.33	-0.44	-0.23	
M	20.0	19.0	20.0	0.58	0.118	19.67	-0.33	-0.12	
MA	21.0	20.0	20.0	0.58	0.118	20.33	-0.10	0.12	
ME	17.0	20.0	20.0	1.73	0.354	19.00	-0.56	-0.35	
ML	3640.0	2580.0	3070.0	530.50	237.612	3096.67	1065.58	1065.79	×
MN									•
MP	19.0	22.0	19.0	1.73	0.354	20.00	-0.21	0.00	
MQ	26.0	24.0	25.0	1.00	0.236	25.00	1.52	1.73	
MS	22.0	23.0	22.0	0.58	0.118	22.33	0.60	0.81	
MT	19.0	19.0	20.0	0.58	0.118	19.33	-0.44	-0.23	
MV	26.0	28.0	29.0	1.53	0.354	27.67	2.44	2.66	
MY									•
N	20.0	21.0	20.0	0.58	0.118	20.33	-0.10	0.12	
NB	42.0	45.0	44.0	1.53	0.354	43.67	7.99	8.20	×
NH	26.0	22.0	18.0	4.00	0.945	22.00	0.48	0.69	
NI	18.0	19.0	17.0	1.00	0.236	18.00	-0.90	-0.69	
NJ	20.0	21.0	21.0	0.58	0.118	20.67	0.02	0.23	
NK	18.0	18.0	17.0	0.58	0.118	17.67	-1.02	-0.81	
NP	20.0	23.0	23.0	1.73	0.354	22.00	0.48	0.69	
NZ									•
O	21.0	21.0	21.0	0.00	0.000	21.00	0.14	0.35	
OA	20.0	21.0	19.0	1.00	0.236	20.00	-0.21	0.00	
OB	20.0	22.0	21.0	1.00	0.236	21.00	0.14	0.35	
OK	15.0	19.0	20.0	2.65	0.591	18.00	-0.90	-0.69	
OL									•
OM									•
OO	15.0	16.0	19.0	2.08	0.473	16.67	-1.37	-1.15	
OT	27.0	28.0	28.0	0.58	0.118	27.67	2.44	2.66	
OZ									•
PB	20.0	20.0	20.0	0.00	0.000	20.00	-0.21	0.00	
PC	19.0	18.0	18.0	0.58	0.118	18.33	-0.79	-0.58	
PD									•
PE	17.0	22.0	17.0	2.89	0.591	18.67	-0.67	-0.46	
PM	21.0	24.0	21.0	1.73	0.354	22.00	0.48	0.69	
PP	15.0	16.0	14.0	1.00	0.236	15.00	-1.94	-1.73	
PQ	19.0	21.0	21.0	1.15	0.236	20.33	-0.10	0.12	
PV	26.0	26.0	35.0	5.20	1.120	29.00	2.91	3.12	×
FW									•
PX	21.0	20.0	21.0	0.58	0.118	20.67	0.02	0.23	
PY									•
Q	20.0	20.0	21.0	0.58	0.118	20.33	-0.10	0.12	
QB	28.0	24.0	22.0	3.06	0.709	24.67	1.41	1.62	
QC									•
QK	19.0	19.0	20.0	0.58	0.118	19.33	-0.44	-0.23	

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Cobalt-60

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known) Tag	
QL	19.0	19.0	19.0	0.00	0.000	19.00	-0.56	-0.35
QM	21.0	22.0	22.0	0.58	0.118	21.67	0.37	0.58
QP	19.0	24.0	24.0	2.89	0.591	22.33	0.60	0.81
QT	29.0	26.0	26.0	1.73	0.354	27.00	2.21	2.42
QX	36.0	36.0	34.0	1.15	0.236	35.33	5.10	5.31 x
QZ	20.0	21.0	21.0	0.58	0.118	20.67	0.02	0.23
R	20.0	20.0	20.0	0.00	0.000	20.00	-0.21	0.00
RC	26.0	23.0	23.0	1.73	0.354	24.00	1.17	1.39
RH	17.0	21.0	15.0	3.06	0.709	17.67	-1.02	-0.81
RK								•
RN	24.0	23.0	23.0	0.58	0.118	23.33	0.94	1.15
RO	23.0	21.0	21.0	1.15	0.236	21.67	0.37	0.58
RQ	20.0	20.0	20.0	0.00	0.000	20.00	-0.21	0.00
RR	21.0	22.0	21.0	0.58	0.118	21.33	0.25	0.46
RU	19.0	20.0	21.0	1.00	0.236	20.00	-0.21	0.00
RV	23.0	23.0	19.0	2.31	0.473	21.67	0.37	0.58
RZ	16.0	19.0	16.0	1.73	0.354	17.00	-1.25	-1.04
S	20.0	20.0	21.0	0.58	0.118	20.33	-0.10	0.12
SA	156.0	132.0	126.0	15.87	5.846	138.00	40.67	40.88 x
SC	21.0	22.0	22.0	0.58	0.118	21.67	0.37	0.58
SD	23.0	20.0	20.0	1.73	0.354	21.00	0.14	0.35
SF	18.0	18.0	21.0	1.73	0.354	19.00	-0.56	-0.35
SI	27.0	22.0	24.0	2.52	0.591	24.33	1.29	1.50
SK	80.0	87.0	77.0	5.13	1.345	81.33	21.04	21.25 x
SM	18.0	17.0	17.0	0.58	0.118	17.33	-1.13	-0.92
SN	19.0	19.0	11.0	4.62	0.945	16.33	-1.48	-1.27
SR	24.0	19.0	17.0	3.61	0.827	20.00	-0.21	0.00
SS	20.0	21.0	22.0	1.00	0.236	21.00	0.14	0.35
ST	19.0	21.0	21.0	1.15	0.236	20.33	-0.10	0.12
SU	22.0	22.0	22.0	0.00	0.000	22.00	0.48	0.69
SV	21.0	21.0	17.0	2.31	0.473	19.67	-0.33	-0.12
SW	19.0	21.0	20.0	1.00	0.236	20.00	-0.21	0.00
SY	20.0	19.0	20.0	0.58	0.118	19.67	-0.33	-0.12
SZ	22.0	22.0	22.0	0.00	0.000	22.00	0.48	0.69
T	20.0	20.0	20.0	0.00	0.000	20.00	-0.21	0.00
TA	23.0	20.0	21.0	1.53	0.354	21.33	0.25	0.46
TB	22.0	24.0	24.0	1.15	0.236	23.33	0.94	1.15
TC								•
TD								•
TE								•
TF								•
TG	26.0	22.0	22.0	2.31	0.473	23.33	0.94	1.15
TI	24.0	36.0	25.0	6.66	1.795	28.33	2.68	2.89
TK								•
TL	20.0	19.0	17.0	1.53	0.354	18.67	-0.67	-0.46

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Cobalt-60

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
TO	42.0	45.0	44.0	1.53	0.354	43.67	7.99	8.20	×
U	20.0	21.0	19.0	1.00	0.236	20.00	-0.21	0.00	
W	18.0	18.0	17.0	0.58	0.118	17.67	-1.02	-0.81	
X	39.0	31.0	35.0	4.00	0.945	35.00	4.99	5.20	×
Y	20.0	18.0	20.0	1.15	0.236	19.33	-0.44	-0.23	
Z	20.0	20.0	21.0	0.58	0.118	20.33	-0.10	0.12	

Data sorted by Laboratory Average

Average	Tag	Lab	Average	Tag	Lab	Average	Tag	Lab
13.33		HP	19.67		SY	20.33		J
14.00		AZ	19.67		SV	20.33		DM
15.00		PP	19.67		M	20.33		CA
16.33		SN	19.67		IU	20.33		C
16.67		OO	19.67		FU	20.33		BL
17.00		RZ	19.67		EA	20.33		AU
17.00		JS	19.67		CC	20.67		QZ
17.33		SM	19.67		BO	20.67		PX
17.33		AE	19.67		BK	20.67		NJ
17.67		W	19.67		BB	20.67		LF
17.67		RH	19.67		AI	20.67		IC
17.67		NK	19.67		AF	20.67		GE
17.67		DT	20.00		U	20.67		FZ
17.67		AL	20.00		T	20.67		FE
18.00		OK	20.00		SW	20.67		DL
18.00		NI	20.00		SR	20.67		CS
18.00		FJ	20.00		RU	20.67		CQ
18.33		PC	20.00		RQ	20.67		AK
18.33		BM	20.00		R	21.00		SS
18.67		TL	20.00		PB	21.00		SD
18.67		PE	20.00		OA	21.00		OB
18.67		HE	20.00		MP	21.00		O
18.67		GI	20.00		KL	21.00		KX
18.67		DD	20.00		JE	21.00		GL
19.00		SF	20.00		HK	21.00		FL
19.00		QL	20.00		E	21.00		EH
19.00		ME	20.00		DE	21.00		DO
19.00		KM	20.00		AP	21.00		CP
19.00		EB	20.00		A	21.00		BH
19.33		Y	20.33		Z	21.00		BA
19.33		QK	20.33		ST	21.33		TA
19.33		MT	20.33		S	21.33		RR
19.33		LT	20.33		Q	21.33		LE
19.33		EW	20.33		PQ	21.33		K
19.33		EL	20.33		N	21.33		JY
19.33		D	20.33		MA	21.33		DH

• = No data submitted

TAG SYMBOLS

↑ = Above control limit

∅ = Insufficient data

× = Determined to be an outlier

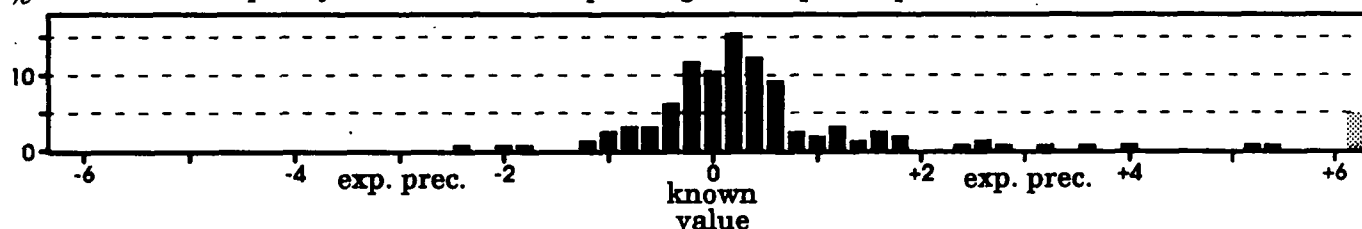
↓ = Below control limit

Cobalt-60

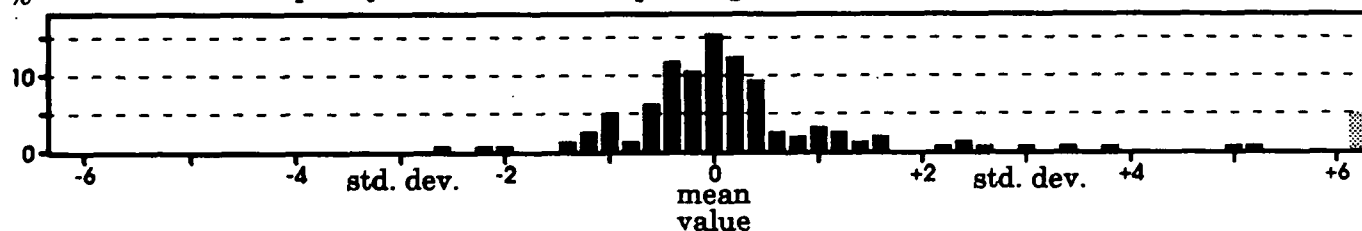
Data sorted by Laboratory Average

Average	Tag	Lab	Average	Tag	Lab	Average	Tag	Lab
21.33		CO	22.33		MS	25.00		EX
21.33		CJ	22.33		DG	25.33		CX
21.67		SC	22.33		AY	27.00		QT
21.67		RV	22.67		CE	27.67		OT
21.67		RO	22.67		AW	27.67		MV
21.67		QM	23.00		IA	28.33		TI
21.67		I	23.33		TG	29.00	x	PV
21.67		CK	23.33		TB	30.33	x	LR
21.67		BC	23.33		RN	31.67	x	HL
21.67		AJ	23.33		L	35.00	x	X
22.00		SZ	23.33		JR	35.33	x	QX
22.00		SU	24.00		RC	40.00	x	BG
22.00		PM	24.00		AN	43.67	x	TO
22.00		NP	24.33		SI	43.67	x	NB
22.00		NH	24.33		HJ	77.67	x	EZ
22.00		HI	24.67		QB	81.33	x	SK
22.00		DR	24.67		IW	129.67	x	DJ
22.33		QP	25.00		MQ	138.00	x	SA
						3096.67	x	ML

Frequency distribution of responding labs(expected prec. vs known value)



Frequency distribution of responding labs(std. dev. vs mean value)



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Zinc-65
Statistical Summary

186 Participants

The known value of this nuclide is **99.0 pCi/l** with an expected precision of **10.0**; the control limits are **81.7 to 116.3**; the warning regions are **81.7 to 87.4** and **110.6 to 116.3**

25(13.4 %) Failed to respond

122(65.6 %) Within all limits

9(4.8 %) Outliers

12(6.5 %) Out of control
but not an outlier

18(9.7 %) In warning zone
but within control

Statistic	Respondents	Non-outliers
Mean	109.14	Grand Avg 104.65
Std. Dev.	27.50	7.49
Variance	755.98	56.17
% Coef. of Var.	25.19	7.16
% deviation of mean from known value	10.25	5.71
Norm. dev. of mean from known value	0.37	0.75
Median	104.67	104.50
% deviation of median from known value	5.72	5.56
Norm. dev. of median from known value	0.21	0.73

21(13.0 %) More than 3 norm. S.D.

73(45.3 %) Within 1 norm. S.D.
of known value

18(11.2 %) Between 2 and 3 norm. S.D.

49(30.4 %) Between 1 and 2 norm. S.D.

Zinc-65

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
A	114.0	103.0	109.0	5.51	0.650	108.67	0.70	1.67	
AB									•
AE	101.0	102.0	107.0	3.21	0.354	103.33	-0.23	0.75	
AF	107.0	113.0	104.0	4.58	0.532	108.00	0.58	1.56	
AI	103.0	105.0	100.0	2.52	0.295	102.67	-0.34	0.64	
AJ	120.0	117.0	114.0	3.00	0.354	117.00	2.14	3.12	↑
AK	100.0	101.0	100.0	0.58	0.059	100.33	-0.75	0.23	
AL	91.0	91.0	81.0	5.77	0.591	87.67	-2.94	-1.96	
AN	124.0	118.0	116.0	4.16	0.473	119.33	2.54	3.52	↑
AP	105.0	97.0	108.0	5.69	0.650	103.33	-0.23	0.75	
AU	110.0	110.0	105.0	2.89	0.295	108.33	0.64	1.62	
AW	101.0	100.0	101.0	0.58	0.059	100.67	-0.69	0.29	
AY	105.0	106.0	100.0	3.21	0.354	103.67	-0.17	0.81	
AZ	99.0	121.0	94.0	14.36	2.133	104.67	0.00	0.98	
BA	106.0	108.0	101.0	3.61	0.413	105.00	0.06	1.04	
BB	105.0	100.0	100.0	2.89	0.295	101.67	-0.52	0.46	
BC	114.0	112.0	107.0	3.61	0.413	111.00	1.10	2.08	
BG	82.0	90.0	85.0	4.04	0.473	85.67	-3.29	-2.31	
BH	97.0	100.0	110.0	6.81	0.768	102.33	-0.40	0.58	
BK	108.0	98.0	106.0	5.29	0.591	104.00	-0.11	0.87	
BL	104.0	99.0	102.0	2.52	0.295	101.67	-0.52	0.46	
BM	105.0	103.0	108.0	2.52	0.295	105.33	0.12	1.10	
BO	110.0	110.0	100.0	5.77	0.591	106.67	0.35	1.33	
BW									•
C	105.0	110.0	110.0	2.89	0.295	108.33	0.64	1.62	
CA	97.0	105.0	107.0	5.29	0.591	103.00	-0.29	0.69	
CC	98.0	98.0	100.0	1.15	0.118	98.67	-1.04	-0.06	
CE	106.0	107.0	102.0	2.65	0.295	105.00	0.06	1.04	
CJ	104.0	106.0	111.0	3.61	0.413	107.00	0.41	1.39	
CK	107.0	104.0	106.0	1.53	0.177	105.67	0.18	1.15	
CO	97.0	110.0	105.0	6.56	0.768	104.00	-0.11	0.87	
CP	106.0	108.0	106.0	1.15	0.118	106.67	0.35	1.33	
CQ	102.0	109.0	107.0	3.61	0.413	106.00	0.23	1.21	
CS	111.0	117.0	113.0	3.06	0.354	113.67	1.56	2.54	
CX	113.0	107.0	110.0	3.00	0.354	110.00	0.93	1.91	
D	100.0	103.0	105.0	2.52	0.295	102.67	-0.34	0.64	
DD	103.0	102.0	101.0	1.00	0.118	102.00	-0.46	0.52	
DE	105.0	105.0	105.0	0.00	0.000	105.00	0.06	1.04	
DG	118.0	116.0	112.0	3.06	0.354	115.33	1.85	2.83	
DH	115.0	114.0	116.0	1.00	0.118	115.00	1.79	2.77	
DJ	286.0	126.0	252.0	84.29	17.097	221.33	20.21	21.19	×
DL	99.0	97.0	101.0	2.00	0.236	99.00	-0.98	0.00	
DM	101.0	100.0	101.0	0.58	0.059	100.67	-0.69	0.29	
DO	100.0	124.0	97.0	14.80	2.133	107.00	0.41	1.39	
DR	121.0	111.0	111.0	5.77	0.591	114.33	1.68	2.66	

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× = Determined to be an outlier

↓ = Below control limit

Zinc-65

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
DT	97.0	98.0	95.0	1.53	0.177	96.67	-1.38	-0.40	
E	99.0	103.0	106.0	3.51	0.413	102.67	-0.34	0.64	
EA	106.0	105.0	103.0	1.53	0.177	104.67	0.00	0.98	
EB	103.0	103.0	101.0	1.15	0.118	102.33	-0.40	0.58	
EH	108.0	105.0	102.0	3.00	0.354	105.00	0.06	1.04	
EL	108.0	106.0	107.0	1.00	0.118	107.00	0.41	1.39	
EW	96.0	104.0	105.0	4.93	0.532	101.67	-0.52	0.46	
EX	101.0	116.0	111.0	7.64	0.886	109.33	0.81	1.79	
EZ	239.0	302.0	258.0	32.32	6.183	266.33	28.00	28.98	×
FE	110.0	120.0	120.0	5.77	0.591	116.67	2.08	3.06	↑
FJ	94.0	81.0	103.0	11.06	1.570	92.67	-2.08	-1.10	
FL	112.0	110.0	98.0	7.57	0.827	106.67	0.35	1.33	
FU	107.0	110.0	112.0	2.52	0.295	109.67	0.87	1.85	
FZ	98.0	110.0	110.0	6.93	0.709	106.00	0.23	1.21	
GE	101.0	97.0	99.0	2.00	0.236	99.00	-0.98	0.00	
GI	100.0	97.0	99.0	1.53	0.177	98.67	-1.04	-0.06	
GL	98.0	106.0	108.0	5.29	0.591	104.00	-0.11	0.87	
HE	100.0	98.0	98.0	1.15	0.118	98.67	-1.04	-0.06	
HI	112.0	97.0	93.0	10.02	1.233	100.67	-0.69	0.29	
HJ	120.0	101.0	102.0	10.69	1.233	107.67	0.52	1.50	
HK	106.0	108.0	106.0	1.15	0.118	106.67	0.35	1.33	
HL	106.0	105.0	103.0	1.53	0.177	104.67	0.00	0.98	
HP	65.0	65.0	65.0	0.00	0.000	65.00	-6.87	-5.89	×
HU									•
I	103.0	101.0	101.0	1.15	0.118	101.67	-0.52	0.46	
IA	124.0	115.0	126.0	5.86	0.650	121.67	2.95	3.93	↑
IC	101.0	107.0	105.0	3.06	0.354	104.33	-0.06	0.92	
IU	107.0	104.0	108.0	2.08	0.236	106.33	0.29	1.27	
IW	115.0	113.0	119.0	3.06	0.354	115.67	1.91	2.89	
J	106.0	108.0	104.0	2.00	0.236	106.00	0.23	1.21	
JE	100.0	106.0	104.0	3.06	0.354	103.33	-0.23	0.75	
JG									•
JR	104.0	104.0	106.0	1.15	0.118	104.67	0.00	0.98	
JS	109.0	122.0	102.0	10.15	1.345	111.00	1.10	2.08	
JY	112.0	129.0	113.0	9.54	1.008	118.00	2.31	3.29	↑
K	106.0	104.0	103.0	1.53	0.177	104.33	-0.06	0.92	
KF									•
KL	100.0	101.0	107.0	3.79	0.413	102.67	-0.34	0.64	
KM	98.0	94.0	100.0	3.06	0.354	97.33	-1.27	-0.29	
KX	105.0	107.0	104.0	1.53	0.177	105.33	0.12	1.10	
L	96.0	94.0	98.0	2.00	0.236	96.00	-1.50	-0.52	
LA									•
LE	130.0	110.0	123.0	10.15	1.345	121.00	2.83	3.81	↑
LF	110.0	100.0	97.0	6.81	0.768	102.33	-0.40	0.58	
LM									•

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Zinc-65

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
LR	131.0	132.0	130.0	1.00	0.118	131.00	4.56	5.54	x
LT	97.0	98.0	97.0	0.58	0.059	97.33	-1.27	-0.29	
M	110.0	118.0	111.0	4.36	0.473	113.00	1.45	2.42	
MA	104.0	107.0	102.0	2.52	0.295	104.33	-0.06	0.92	
ME	106.0	108.0	113.0	3.61	0.413	109.00	0.75	1.73	
ML	176.0	147.0	131.0	22.81	4.158	151.33	8.09	9.06	x
MN									•
MP	104.0	105.0	92.0	7.23	0.768	100.33	-0.75	0.23	
MQ	98.0	100.0	101.0	1.53	0.177	99.67	-0.86	0.12	
MS	117.0	113.0	114.0	2.08	0.236	114.67	1.73	2.71	
MT	109.0	104.0	101.0	4.04	0.473	104.67	0.00	0.98	
MV	103.0	109.0	105.0	3.06	0.354	105.67	0.18	1.15	
MY									•
N	97.0	98.0	96.0	1.00	0.118	97.00	-1.33	-0.35	
NB	200.0	210.0	218.0	9.02	1.120	209.33	18.13	19.11	x
NH	107.0	111.0	126.0	10.02	1.233	114.67	1.73	2.71	
NI	105.0	88.0	83.0	11.53	1.570	92.00	-2.19	-1.21	
NJ	100.0	100.0	100.0	0.00	0.000	100.00	-0.81	0.17	
NK	94.0	94.0	87.0	4.04	0.413	91.67	-2.25	-1.27	
NP	89.0	106.0	108.0	10.44	1.233	101.00	-0.63	0.35	
NZ									•
O	109.0	108.0	108.0	0.58	0.059	108.33	0.64	1.62	
OA	102.0	105.0	105.0	1.73	0.177	104.00	-0.11	0.87	
OB	103.0	102.0	104.0	1.00	0.118	103.00	-0.29	0.69	
OK	61.0	76.0	121.0	31.22	5.846	86.00	-3.23	-2.25	
OL									•
OM									•
OO	82.0	67.0	84.0	9.29	1.008	77.67	-4.67	-3.70	x
OT	117.0	109.0	130.0	10.60	1.458	118.67	2.43	3.41	↑
OZ									•
PB	98.0	96.0	100.0	2.00	0.236	98.00	-1.15	-0.17	
PC	97.0	96.0	102.0	3.21	0.354	98.33	-1.09	-0.12	
PD									•
PE	111.0	104.0	102.0	4.73	0.532	105.67	0.18	1.15	
PM	101.0	120.0	101.0	10.97	1.233	107.33	0.46	1.44	
PP	83.0	82.0	77.0	3.21	0.354	80.67	-4.15	-3.18	↓
PQ	95.0	99.0	100.0	2.65	0.295	98.00	-1.15	-0.17	
PV	128.0	124.0	134.0	5.03	0.591	128.67	4.16	5.14	↑
PW									•
PX	107.0	108.0	108.0	0.58	0.059	107.67	0.52	1.50	
PY									•
Q	105.0	98.0	99.0	3.79	0.413	100.67	-0.69	0.29	
QB	134.0	101.0	121.0	16.62	2.808	118.67	2.43	3.41	↑
QC									•
QK	94.0	96.0	110.0	8.72	0.945	100.00	-0.81	0.17	

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Zinc-65

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
QL	101.0	108.0	101.0	4.04	0.413	103.33	-0.23	0.75	
QM	109.0	100.0	104.0	4.51	0.532	104.33	-0.06	0.92	
QP	108.0	101.0	104.0	3.51	0.413	104.33	-0.06	0.92	
QT	96.0	90.0	98.0	4.16	0.473	94.67	-1.73	-0.75	
QX	123.0	122.0	124.0	1.00	0.118	123.00	3.18	4.16	↑
QZ	104.0	108.0	108.0	2.31	0.236	106.67	0.35	1.33	
R	104.0	105.0	100.0	2.65	0.295	103.00	-0.29	0.69	
RC	122.0	106.0	118.0	8.33	0.945	115.33	1.85	2.83	
RH	87.0	97.0	96.0	5.51	0.591	93.33	-1.96	-0.98	
RK									•
RN	102.0	112.0	106.0	5.03	0.591	106.67	0.35	1.33	
RO	109.0	102.0	112.0	5.13	0.591	107.67	0.52	1.50	
RQ	115.0	115.0	115.0	0.00	0.000	115.00	1.79	2.77	
RR	112.0	104.0	107.0	4.04	0.473	107.67	0.52	1.50	
RU	104.0	108.0	106.0	2.00	0.236	106.00	0.23	1.21	
RV	78.0	92.0	83.0	7.09	0.827	84.33	-3.52	-2.54	
RZ	113.0	118.0	112.0	3.21	0.354	114.33	1.68	2.66	
S	103.0	101.0	107.0	3.06	0.354	103.67	-0.17	0.81	
SA		164.0	172.0						∅
SC	110.0	114.0	115.0	2.65	0.295	113.00	1.45	2.42	
SD	105.0	111.0	110.0	3.21	0.354	108.67	0.70	1.67	
SF	106.0	103.0	108.0	2.52	0.295	105.67	0.18	1.15	
SI	109.0	112.0	96.0	8.50	0.945	105.67	0.18	1.15	
SK	340.0	328.0	282.0	30.62	5.621	316.67	36.72	37.70	×
SM	97.0	93.0	101.0	4.00	0.473	97.00	-1.33	-0.35	
SN	104.0	107.0	108.0	2.08	0.236	106.33	0.29	1.27	
SR	106.0	109.0	102.0	3.51	0.413	105.67	0.18	1.15	
SS	104.0	102.0	94.0	5.29	0.591	100.00	-0.81	0.17	
ST									•
SU	113.0	113.0	113.0	0.00	0.000	113.00	1.45	2.42	
SV	108.0	89.0	88.0	11.27	1.345	95.00	-1.67	-0.69	
SW	101.0	103.0	101.0	1.15	0.118	101.67	-0.52	0.46	
SY	105.0	110.0	109.0	2.65	0.295	108.00	0.58	1.56	
SZ	117.0	119.0	118.0	1.00	0.118	118.00	2.31	3.29	↑
T	101.0	99.0	100.0	1.00	0.118	100.00	-0.81	0.17	
TA	99.0	100.0	99.0	0.58	0.059	99.33	-0.92	0.06	
TB	116.0	110.0	103.0	6.51	0.768	109.67	0.87	1.85	
TC									•
TD									•
TE									•
TF									•
TG	102.0	100.0	95.0	3.61	0.413	99.00	-0.98	0.00	
TI	115.0	99.0	104.0	8.19	0.945	106.00	0.23	1.21	
TK									•
TL	93.0	96.0	94.0	1.53	0.177	94.33	-1.79	-0.81	

• = No data submitted

TAG SYMBOLS

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× = Determined to be an outlier

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Zinc-65

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
TO	210.0	232.0	238.0	14.74	2.245	226.67	21.13	22.11	x
U	106.0	90.0	98.0	8.00	0.945	98.00	-1.15	-0.17	
W	99.0	92.0	99.0	4.04	0.413	96.67	-1.38	-0.40	
X	96.0	100.0	98.0	2.00	0.236	98.00	-1.15	-0.17	
Y	106.0	93.0	106.0	7.51	0.768	101.67	-0.52	0.46	
Z	105.0	100.0	101.0	2.65	0.295	102.00	-0.46	0.52	

Data sorted by Laboratory Average

Average	Tag	Lab	Average	Tag	Lab	Average	Tag	Lab
65.00	x	HP	100.00		QK	104.00		BK
77.67	x	OO	100.00		NJ	104.33		QP
80.67	↓	PP	100.33		MP	104.33		QM
84.33		RV	100.33		AK	104.33		MA
85.67		BG	100.67		Q	104.33		K
86.00		OK	100.67		HI	104.33		IC
87.67		AL	100.67		DM	104.67		MT
91.67		NK	100.67		AW	104.67		JR
92.00		NI	101.00		NP	104.67		HL
92.67		FJ	101.67		Y	104.67		EA
93.33		RH	101.67		SW	104.67		AZ
94.33		TL	101.67		I	105.00		EH
94.67		QT	101.67		EW	105.00		DE
95.00		SV	101.67		BL	105.00		CE
96.00		L	101.67		BB	105.00		BA
96.67		W	102.00		Z	105.33		KX
96.67		DT	102.00		DD	105.33		BM
97.00		SM	102.33		LF	105.67		SR
97.00		N	102.33		EB	105.67		SI
97.33		LT	102.33		BH	105.67		SF
97.33		KM	102.67		KL	105.67		PE
98.00		X	102.67		E	105.67		MV
98.00		U	102.67		D	105.67		CK
98.00		PQ	102.67		AI	106.00		TI
98.00		PB	103.00		R	106.00		RU
98.33		PC	103.00		OB	106.00		J
98.67		HE	103.00		CA	106.00		FZ
98.67		GI	103.33		QL	106.00		CQ
98.67		CC	103.33		JE	106.33		SN
99.00		TG	103.33		AP	106.33		IU
99.00		GE	103.33		AE	106.67		RN
99.00		DL	103.67		S	106.67		QZ
99.33		TA	103.67		AY	106.67		HK
99.67		MQ	104.00		OA	106.67		FL
100.00		T	104.00		GL	106.67		CP
100.00		SS	104.00		CO	106.67		BO

• = No data submitted

TAG SYMBOLS

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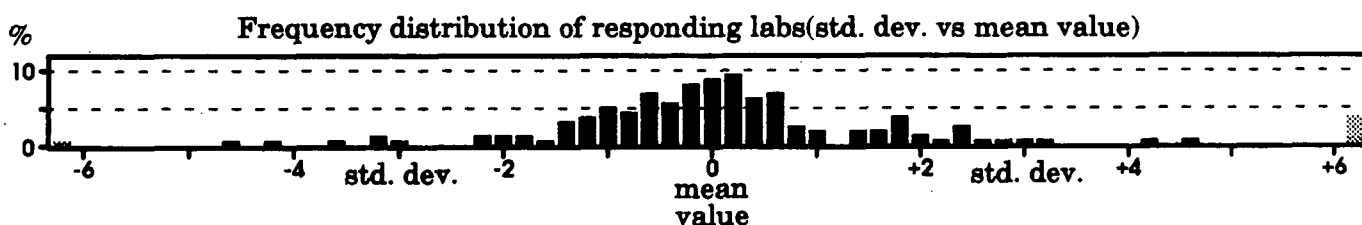
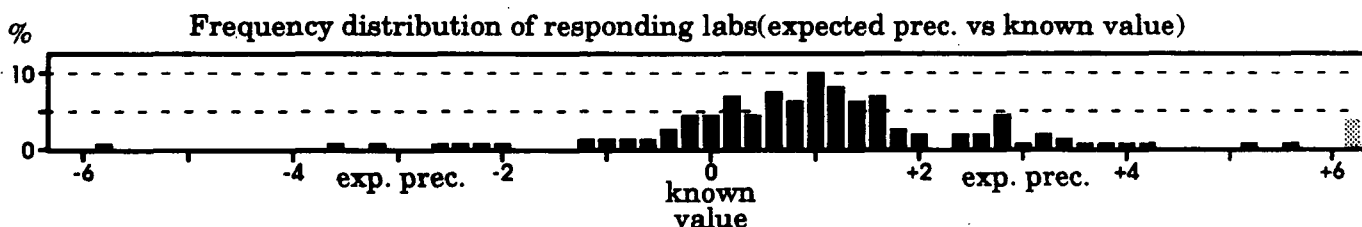
x = Determined to be an outlier

↓ = Below control limit

Zinc-65

Data sorted by Laboratory Average

Average	Tag	Lab	Average	Tag	Lab	Average	Tag	Lab
107.00		EL	109.67		TB	116.67	↑	FE
107.00		DO	109.67		FU	117.00	↑	AJ
107.00		CJ	110.00		CX	118.00	↑	SZ
107.33		PM	111.00		JS	118.00	↑	JY
107.67		RR	111.00		BC	118.67	↑	QB
107.67		RO	113.00		SU	118.67	↑	OT
107.67		PX	113.00		SC	119.33	↑	AN
107.67		HJ	113.00		M	121.00	↑	LE
108.00		SY	113.67		CS	121.67	↑	IA
108.00		AF	114.33		RZ	123.00	↑	QX
108.33		O	114.33		DR	128.67	↑	PV
108.33		C	114.67		NH	131.00	×	LR
108.33		AU	114.67		MS	151.33	×	ML
108.67		SD	115.00		RQ	209.33	×	NB
108.67		A	115.00		DH	221.33	×	DJ
109.00		ME	115.33		RC	226.67	×	TO
109.33		EX	115.33		DG	266.33	×	EZ
			115.67		IW	316.67	×	SK



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TAG SYMBOLS

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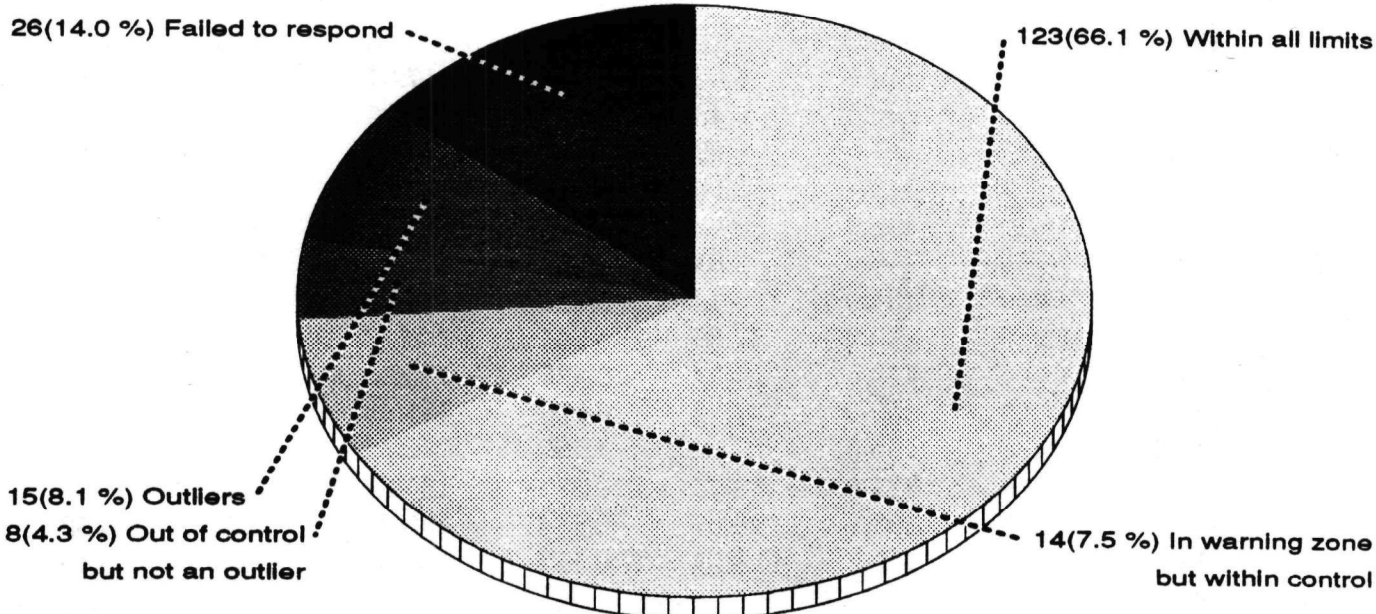
↑ = Above control limit

↓ = Below control limit

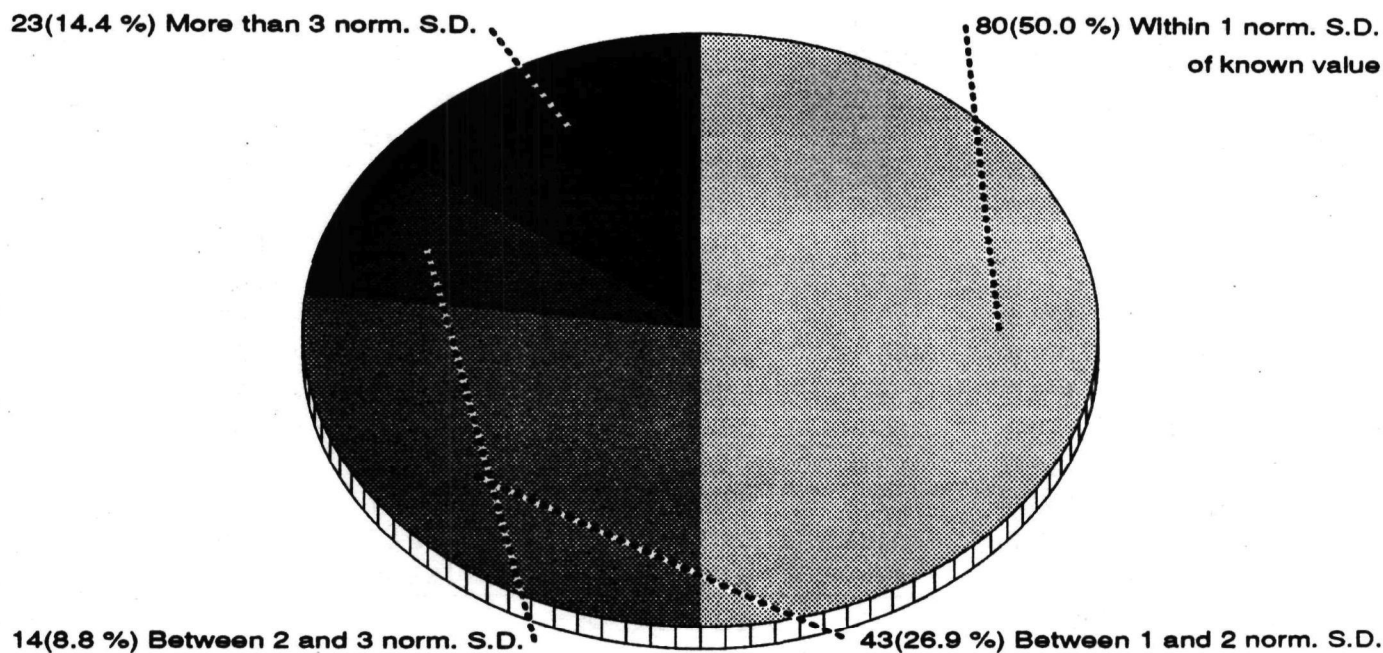
Ruthenium-106
Statistical Summary

186 Participants

The known value of this nuclide is 141.0 pCi/l with an expected precision of 14.0; the control limits are 116.7 to 165.3; the warning regions are 116.7 to 124.8 and 157.2 to 165.3



Statistic	Respondents	Non-outliers
Mean	146.56	Grand Avg 138.47
Std. Dev.	57.08	11.86
Variance	3258.05	140.58
% Coef. of Var.	38.95	8.56
% deviation of mean from known value	3.94	-1.80
Norm. dev. of mean from known value	0.10	-0.21
Median	138.00	137.33
% deviation of median from known value	-2.13	-2.60
Norm. dev. of median from known value	-0.05	-0.31



Ruthenium-106

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
A	140.0	130.0	144.0	7.21	0.591	138.00	-0.06	-0.37	
AB									•
AE	123.0	139.0	134.0	8.19	0.675	132.00	-0.80	-1.11	
AF	125.0	112.0	116.0	6.66	0.548	117.67	-2.57	-2.89	
AI	138.0	126.0	136.0	6.43	0.506	133.33	-0.64	-0.95	
AJ	134.0	130.0	147.0	8.89	0.717	137.00	-0.18	-0.49	
AK	142.0	145.0	148.0	3.00	0.253	145.00	0.81	0.49	
AL	147.0	151.0	126.0	13.43	1.104	141.33	0.35	0.04	
AN	172.0	167.0	165.0	3.61	0.295	168.00	3.65	3.34	↑
AP	143.0	125.0	131.0	9.17	0.759	133.00	-0.68	-0.99	
AU	190.0	120.0	130.0	37.86	4.721	146.67	1.01	0.70	
AW	149.0	139.0	148.0	5.51	0.422	145.33	0.85	0.54	
AY	141.0	163.0	150.0	11.06	0.928	151.33	1.59	1.28	
AZ	117.0	138.0	185.0	34.82	4.560	146.67	1.01	0.70	
BA	140.0	138.0	131.0	4.73	0.380	136.33	-0.26	-0.58	
BB	147.0	135.0	127.0	10.07	0.844	136.33	-0.26	-0.58	
BC	153.0	146.0	136.0	8.54	0.717	145.00	0.81	0.49	
BG	125.0	139.0							Ø
BH	140.0	136.0	149.0	6.66	0.548	141.67	0.40	0.08	
BK	130.0	138.0	131.0	4.36	0.338	133.00	-0.68	-0.99	
BL	124.0	124.0	126.0	1.15	0.084	124.67	-1.71	-2.02	
BM	122.0	124.0	129.0	3.61	0.295	125.00	-1.67	-1.98	
BO	130.0	140.0	140.0	5.77	0.422	136.67	-0.22	-0.54	
BW									•
C	150.0	145.0	143.0	3.61	0.295	146.00	0.93	0.62	
CA	129.0	150.0	149.0	11.85	0.886	142.67	0.52	0.21	
CC	122.0	122.0	121.0	0.58	0.042	121.67	-2.08	-2.39	
CE	138.0	143.0	136.0	3.61	0.295	139.00	0.07	-0.25	
CJ	138.0	115.0	128.0	11.53	0.970	127.00	-1.42	-1.73	
CK	140.0	124.0	140.0	9.24	0.675	134.67	-0.47	-0.78	
CO	146.0	153.0	135.0	9.07	0.759	144.67	0.77	0.45	
CP	143.0	154.0	148.0	5.51	0.464	148.33	1.22	0.91	
CQ	142.0	147.0	139.0	4.04	0.338	142.67	0.52	0.21	
CS	128.0	126.0	144.0	9.87	0.759	132.67	-0.72	-1.03	
CX	157.0	143.0	139.0	9.45	0.759	146.33	0.97	0.66	
D	131.0	128.0	127.0	2.08	0.169	128.67	-1.21	-1.53	
DD	118.0	127.0	131.0	6.66	0.548	125.33	-1.63	-1.94	
DE	125.0	128.0	128.0	1.73	0.127	127.00	-1.42	-1.73	
DG	159.0	163.0	155.0	4.00	0.338	159.00	2.54	2.23	
DH	153.0	144.0	144.0	5.20	0.380	147.00	1.06	0.74	
DJ	168.0	155.0	180.0	12.50	1.104	167.67	3.61	3.30	↑
DL	143.0	148.0	123.0	13.23	1.104	138.00	-0.06	-0.37	
DM	133.0	133.0	132.0	0.58	0.042	132.67	-0.72	-1.03	
DO	131.0	169.0	161.0	20.03	2.149	153.67	1.88	1.57	
DR	134.0	139.0	126.0	6.56	0.548	133.00	-0.68	-0.99	

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Ruthenium-106

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
DT	129.0	169.0	134.0	21.79	2.310	144.00	0.68	0.37	
E	144.0	137.0	131.0	6.51	0.548	137.33	-0.14	-0.45	
EA	143.0	148.0	128.0	10.41	0.844	139.67	0.15	-0.16	
EB	125.0	125.0	123.0	1.15	0.084	124.33	-1.75	-2.06	
EH	145.0	145.0	132.0	7.51	0.548	140.67	0.27	-0.04	
EL	150.0	132.0	128.0	11.72	0.928	136.67	-0.22	-0.54	
EW	120.0	117.0	115.0	2.52	0.211	117.33	-2.61	-2.93	
EX	134.0	170.0	145.0	18.45	1.988	149.67	1.39	1.07	
EZ	177.0	217.0	195.0	20.08	2.310	196.33	7.16	6.85	×
FE	170.0	150.0	150.0	11.55	0.844	156.67	2.25	1.94	
FJ	122.0	146.0	100.0	23.01	2.792	122.67	-1.96	-2.27	
FL	149.0	131.0	142.0	9.07	0.759	140.67	0.27	-0.04	
FU	128.0	140.0	152.0	12.00	1.024	140.00	0.19	-0.12	
FZ	96.0	160.0	140.0	32.74	4.238	132.00	-0.80	-1.11	
GE	123.0	148.0	143.0	13.23	1.104	138.00	-0.06	-0.37	
GI	119.0	132.0	126.0	6.51	0.548	125.67	-1.58	-1.90	
GL	145.0	155.0	133.0	11.02	0.928	144.33	0.73	0.41	
HE	140.0	140.0	139.0	0.58	0.042	139.67	0.15	-0.16	
HI	136.0	140.0	138.0	2.00	0.169	138.00	-0.06	-0.37	
HJ	153.0	99.0	161.0	33.72	4.078	137.67	-0.10	-0.41	
HK	141.0	137.0	137.0	2.31	0.169	138.33	-0.02	-0.33	
HL	133.0	135.0	144.0	5.86	0.464	137.33	-0.14	-0.45	
HP	81.0	81.0	81.0	0.00	0.000	81.00	-7.11	-7.42	×
HU									•
I	132.0	123.0	153.0	15.39	1.506	136.00	-0.31	-0.62	
IA	151.0	163.0	157.0	6.00	0.506	157.00	2.29	1.98	
IC	122.0	130.0	138.0	8.00	0.675	130.00	-1.05	-1.36	
IU	126.0	130.0	130.0	2.31	0.169	128.67	-1.21	-1.53	
IW									•
J	133.0	132.0	128.0	2.65	0.211	131.00	-0.92	-1.24	
JE	128.0	133.0	130.0	2.52	0.211	130.33	-1.01	-1.32	
JG									•
JR	136.0	126.0	138.0	6.43	0.506	133.33	-0.64	-0.95	
JS	205.0	233.0	267.0	29.61	3.837	236.00	12.07	11.75	×
JY	201.0	152.0	156.0	27.21	3.033	169.67	3.86	3.55	↑
K	139.0	126.0	121.0	9.29	0.759	128.67	-1.21	-1.53	
KF									•
KL	133.0	140.0	133.0	4.04	0.295	135.33	-0.39	-0.70	
KM	141.0	142.0	150.0	4.93	0.380	144.33	0.73	0.41	
KX	141.0	139.0	139.0	1.15	0.084	139.67	0.15	-0.16	
L	169.0	147.0	143.0	14.00	1.185	153.00	1.80	1.48	
LA									•
LE	141.0	251.0	118.0	71.08	9.784	170.00	3.90	3.59	↑
LF	140.0	120.0	130.0	10.00	0.844	130.00	-1.05	-1.36	
LM									•

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Ruthenium-106

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
LR	57.0	53.0	50.0	3.51	0.295	53.33	-10.53	-10.85	×
LT	155.0	155.0	154.0	0.58	0.042	154.67	2.00	1.69	
M	130.0	125.0	129.0	2.65	0.211	128.00	-1.30	-1.61	
MA	133.0	119.0	130.0	7.37	0.591	127.33	-1.38	-1.69	
ME	154.0	137.0	167.0	15.04	1.506	152.67	1.76	1.44	
ML	404.0	355.0	392.0	25.54	3.033	383.67	30.34	30.02	×
MN									•
MP	154.0	144.0	150.0	5.03	0.422	149.33	1.34	1.03	
MQ	158.0	156.0	159.0	1.53	0.127	157.67	2.38	2.06	
MS	136.0	138.0	129.0	4.73	0.380	134.33	-0.51	-0.82	
MT	147.0	144.0	145.0	1.53	0.127	145.33	0.85	0.54	
MV	138.0	135.0	145.0	5.13	0.422	139.33	0.11	-0.21	
MY									•
N	130.0	127.0	147.0	10.79	0.844	134.67	-0.47	-0.78	
NB	282.0	300.0	305.0	12.10	0.970	295.67	19.45	19.14	×
NH	189.0	141.0	233.0	46.01	6.489	187.67	6.08	5.77	×
NI	97.0	53.0	38.0	30.66	3.837	62.67	-9.38	-9.69	×
NJ	120.0	130.0	130.0	5.77	0.422	126.67	-1.46	-1.77	
NK	98.0	68.0	110.0	21.63	2.470	92.00	-5.75	-6.06	×
NP	108.0	115.0	153.0	24.21	2.712	125.33	-1.63	-1.94	
NZ									•
O	143.0	143.0	143.0	0.00	0.000	143.00	0.56	0.25	
OA	130.0	141.0	131.0	6.08	0.464	134.00	-0.55	-0.87	
OB	135.0	150.0	144.0	7.55	0.633	143.00	0.56	0.25	
OK	88.0	100.0	113.0	12.50	1.104	100.33	-4.72	-5.03	↓
OL									•
OM									•
OO	107.0	133.0	100.0	17.39	1.747	113.33	-3.11	-3.42	↓
OT	203.0	232.0	155.0	38.89	5.283	196.67	7.20	6.89	×
OZ									•
PB	140.0	145.0	135.0	5.00	0.422	140.00	0.19	-0.12	
PC	132.0	121.0	125.0	5.57	0.464	126.00	-1.54	-1.86	
PD									•
PE	133.0	133.0	134.0	0.58	0.042	133.33	-0.64	-0.95	
PM	134.0	122.0	147.0	12.50	1.104	134.33	-0.51	-0.82	
PP	62.0	85.0	86.0	13.58	1.024	77.67	-7.52	-7.84	×
PQ	124.0	132.0	139.0	7.51	0.633	131.67	-0.84	-1.15	
PV	167.0	168.0	177.0	5.51	0.422	170.67	3.98	3.67	↑
PW									•
PX	148.0	147.0	149.0	1.00	0.084	148.00	1.18	0.87	
PY									•
Q	122.0	116.0	123.0	3.79	0.295	120.33	-2.24	-2.56	
QB	189.0	163.0	138.0	25.50	3.194	163.33	3.08	2.76	
QC									•
QK	124.0	132.0	144.0	10.07	0.844	133.33	-0.64	-0.95	

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Ruthenium-106

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
QL	144.0	141.0	137.0	3.51	0.295	140.67	0.27	-0.04	
QM	144.0	141.0	107.0	20.55	2.069	130.67	-0.97	-1.28	
QP	151.0	148.0	125.0	14.22	1.185	141.33	0.35	0.04	
QT	143.0	116.0	127.0	13.58	1.265	128.67	-1.21	-1.53	
QX	171.0	173.0	169.0	2.00	0.169	171.00	4.02	3.71	↑
QZ	135.0	138.0	127.0	5.69	0.464	133.33	-0.64	-0.95	
R	140.0	134.0	140.0	3.46	0.253	138.00	-0.06	-0.37	
RC	171.0	201.0	198.0	16.52	1.506	190.00	6.38	6.06	×
RH	111.0	128.0	151.0	20.07	2.310	130.00	-1.05	-1.36	
RK									•
RN	150.0	132.0	149.0	10.12	0.759	143.67	0.64	0.33	
RO	134.0	143.0	129.0	7.09	0.591	135.33	-0.39	-0.70	
RQ	142.0	142.0	142.0	0.00	0.000	142.00	0.44	0.12	
RR	115.0	148.0	156.0	21.73	2.390	139.67	0.15	-0.16	
RU	133.0	132.0	138.0	3.21	0.253	134.33	-0.51	-0.82	
RV	150.0	130.0	96.0	27.30	3.435	125.33	-1.63	-1.94	
RZ	131.0	136.0	128.0	4.04	0.338	131.67	-0.84	-1.15	
S	145.0	151.0	151.0	3.46	0.253	149.00	1.30	0.99	
SA	798.0	653.0	645.0	86.12	11.391	698.67	69.31	68.99	×
SC	139.0	147.0	146.0	4.36	0.338	144.00	0.68	0.37	
SD	157.0	174.0	142.0	16.01	1.667	157.67	2.38	2.06	
SF	132.0	137.0	120.0	8.74	0.717	129.67	-1.09	-1.40	
SI	144.0	133.0	129.0	7.77	0.633	135.33	-0.39	-0.70	
SK	307.0	351.0	453.0	74.90	10.828	370.33	28.69	28.37	×
SM	136.0	155.0	158.0	11.93	0.928	149.67	1.39	1.07	
SN	129.0	129.0	101.0	16.17	1.345	119.67	-2.33	-2.64	
SR	126.0	130.0	97.0	18.01	1.747	117.67	-2.57	-2.89	
SS	130.0	130.0	150.0	11.55	0.844	136.67	-0.22	-0.54	
ST	127.0	128.0	153.0	14.73	1.185	136.00	-0.31	-0.62	
SU	143.0	144.0	146.0	1.53	0.127	144.33	0.73	0.41	
SV	93.0								∅
SW	136.0	149.0	139.0	6.81	0.548	141.33	0.35	0.04	
SY	137.0	131.0	143.0	6.00	0.506	137.00	-0.18	-0.49	
SZ	153.0	151.0	156.0	2.52	0.211	153.33	1.84	1.53	
T	127.0	142.0	130.0	7.94	0.633	133.00	-0.68	-0.99	
TA	142.0	134.0	139.0	4.04	0.338	138.33	-0.02	-0.33	
TB	147.0	163.0	126.0	18.56	2.069	145.33	0.85	0.54	
TC									•
TD									•
TE									•
TF									•
TG	155.0	162.0	152.0	5.13	0.422	156.33	2.21	1.90	
TI	130.0	142.0	168.0	19.43	2.149	146.67	1.01	0.70	
TK									•
TL	121.0	153.0	114.0	20.79	2.229	129.33	-1.13	-1.44	

• = No data submitted

TAG SYMBOLS

↑ = Above control limit

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Ruthenium-106

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
TO	282.0	253.0	214.0	34.12	4.560	249.67	13.76	13.44	x
U	137.0	149.0	128.0	10.54	0.886	138.00	-0.06	-0.37	
W	132.0	135.0	133.0	1.53	0.127	133.33	-0.64	-0.95	
X	124.0	130.0	112.0	9.17	0.759	122.00	-2.04	-2.35	
Y	140.0	128.0	128.0	6.93	0.506	132.00	-0.80	-1.11	
Z	125.0	128.0	129.0	2.08	0.169	127.33	-1.38	-1.69	

Data sorted by Laboratory Average

Average	Tag	Lab	Average	Tag	Lab	Average	Tag	Lab
53.33	x	LR	130.00		LF	136.67		EL
62.67	x	NI	130.00		IC	136.67		BO
77.67	x	PP	130.33		JE	137.00		SY
81.00	x	HP	130.67		QM	137.00		AJ
92.00	x	NK	131.00		J	137.33		HL
100.33	↓	OK	131.67		RZ	137.33		E
113.33	↓	OO	131.67		PQ	137.67		HJ
117.33		EW	132.00		Y	138.00		U
117.67		SR	132.00		FZ	138.00		R
117.67		AF	132.00		AE	138.00		HI
119.67		SN	132.67		DM	138.00		GE
120.33		Q	132.67		CS	138.00		DL
121.67		CC	133.00		T	138.00		A
122.00		X	133.00		DR	138.33		TA
122.67		FJ	133.00		BK	138.33		HK
124.33		EB	133.00		AP	139.00		CE
124.67		BL	133.33		W	139.33		MV
125.00		BM	133.33		QZ	139.67		RR
125.33		RV	133.33		QK	139.67		KX
125.33		NP	133.33		PE	139.67		HE
125.33		DD	133.33		JR	139.67		EA
125.67		GI	133.33		AI	140.00		PB
126.00		PC	134.00		OA	140.00		FU
126.67		NJ	134.33		RU	140.67		QL
127.00		DE	134.33		PM	140.67		FL
127.00		CJ	134.33		MS	140.67		EH
127.33		Z	134.67		N	141.33		SW
127.33		MA	134.67		CK	141.33		QP
128.00		M	135.33		SI	141.33		AL
128.67		QT	135.33		RO	141.67		BH
128.67		K	135.33		KL	142.00		RQ
128.67		IU	136.00		ST	142.67		CQ
128.67		D	136.00		I	142.67		CA
129.33		TL	136.33		BB	143.00		OB
129.67		SF	136.33		BA	143.00		O
130.00		RH	136.67		SS	143.67		RN

• = No data submitted

TAG SYMBOLS

↑ = Above control limit

∅ = Insufficient data

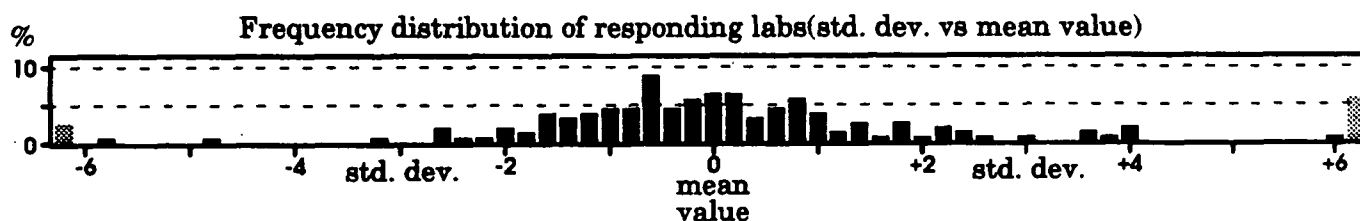
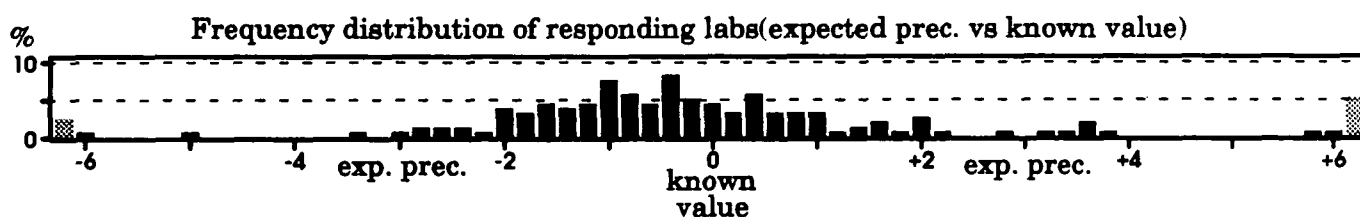
x = Determined to be an outlier

↓ = Below control limit

Ruthenium-106

Data sorted by Laboratory Average

Average	Tag	Lab	Average	Tag	Lab	Average	Tag	Lab
144.00		SC	148.00		PX	159.00		DG
144.00		DT	148.33		CP	163.33		QB
144.33		SU	149.00		S	167.67	↑	DJ
144.33		KM	149.33		MP	168.00	↑	AN
144.33		GL	149.67		SM	169.67	↑	JY
144.67		CO	149.67		EX	170.00	↑	LE
145.00		BC	151.33		AY	170.67	↑	PV
145.00		AK	152.67		ME	171.00	↑	QX
145.33		TB	153.00		L	187.67	×	NH
145.33		MT	153.33		SZ	190.00	×	RC
145.33		AW	153.67		DO	196.33	×	EZ
146.00		C	154.67		LT	196.67	×	OT
146.33		CX	156.33		TG	236.00	×	JS
146.67		TI	156.67		FE	249.67	×	TO
146.67		AZ	157.00		IA	295.67	×	NB
146.67		AU	157.67		SD	370.33	×	SK
147.00		DH	157.67		MQ	383.67	×	ML
						698.67	×	SA



• ≡ No data submitted

∅ ≡ Insufficient data

TAG SYMBOLS

× ≡ Determined to be an outlier

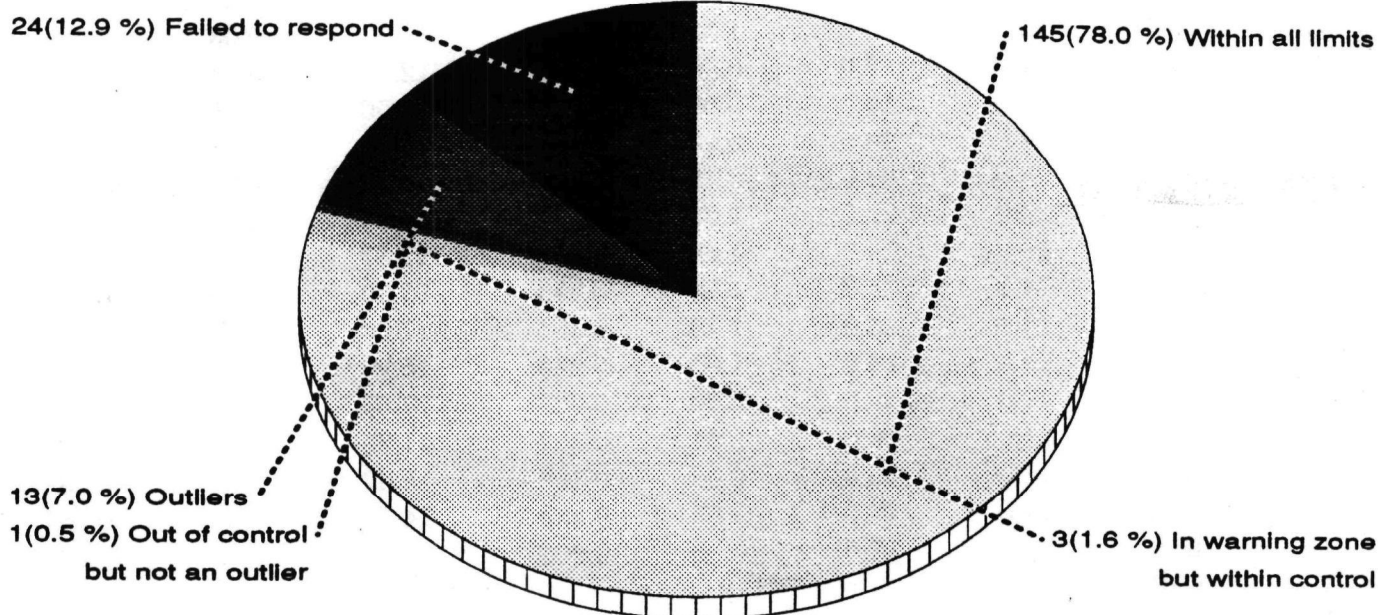
↑ ≡ Above control limit

↓ ≡ Below control limit

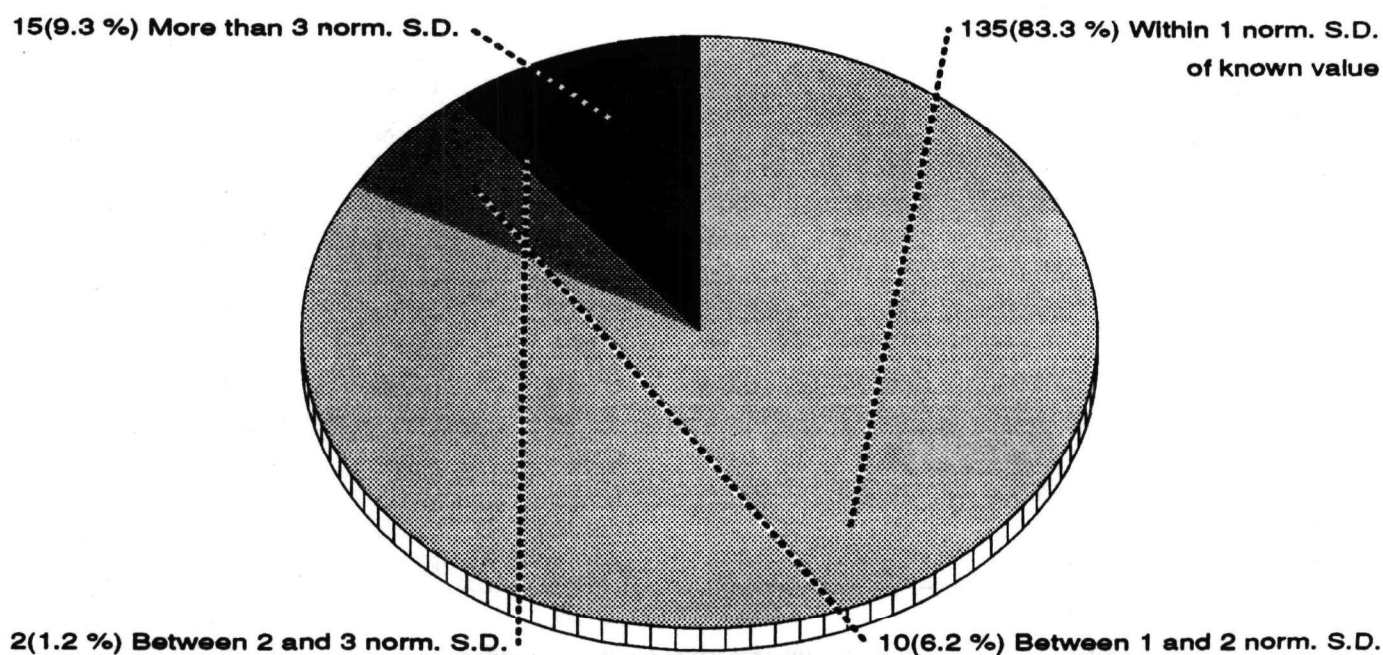
Cesium-134
Statistical Summary

186 Participants

The known value of this nuclide is 15.0 pCi/l with an expected precision of 5.0; the control limits are 6.3 to 23.7; the warning regions are 6.3 to 9.2 and 20.8 to 23.7



Statistic	Respondents	Non-outliers
Mean	19.70	Grand Avg 14.76
Std. Dev.	24.55	1.99
Variance	602.51	3.95
% Coef. of Var.	124.63	13.46
% deviation of mean from known value	31.30	-1.60
Norm. dev. of mean from known value	0.19	-0.12
Median	14.67	14.67
% deviation of median from known value	-2.22	-2.22
Norm. dev. of median from known value	-0.01	-0.17



Cesium-134

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
A	16.0	14.0	14.0	1.15	0.236	14.67	-0.03	-0.12	
AB									•
AE	16.0	15.0	13.0	1.53	0.354	14.67	-0.03	-0.12	
AF	13.0	12.0	12.0	0.58	0.118	12.33	-0.84	-0.92	
AI	14.0	14.0	14.0	0.00	0.000	14.00	-0.26	-0.35	
AJ	14.0	14.0	14.0	0.00	0.000	14.00	-0.26	-0.35	
AK	98.0	98.0	99.0	0.58	0.118	98.33	28.95	28.87	×
AL	24.0	23.0	22.0	1.00	0.236	23.00	2.85	2.77	
AN	11.0	13.0	14.0	1.53	0.354	12.67	-0.73	-0.81	
AP	17.0	14.0	14.0	1.73	0.354	15.00	0.08	0.00	
AU	18.0	18.0	15.0	1.73	0.354	17.00	0.78	0.69	
AW	14.0	15.0	16.0	1.00	0.236	15.00	0.08	0.00	
AY	19.0	19.0	19.0	0.00	0.000	19.00	1.47	1.39	
AZ	18.0	21.0	25.0	3.51	0.827	21.33	2.28	2.19	
BA	15.0	16.0	16.0	0.58	0.118	15.67	0.31	0.23	
BB	15.0	14.0	13.0	1.00	0.236	14.00	-0.26	-0.35	
BC	15.0	15.0	15.0	0.00	0.000	15.00	0.08	0.00	
BG	13.0	14.0							Ø
BH	13.0	15.0	12.0	1.53	0.354	13.33	-0.49	-0.58	
BK	16.0	16.0	15.0	0.58	0.118	15.67	0.31	0.23	
BL	13.0	15.0	12.0	1.53	0.354	13.33	-0.49	-0.58	
BM	12.0	14.0	13.0	1.00	0.236	13.00	-0.61	-0.69	
BO	13.0	14.0	14.0	0.58	0.118	13.67	-0.38	-0.46	
BW									•
C	15.0	16.0	17.0	1.00	0.236	16.00	0.43	0.35	
CA	15.0	15.0	13.0	1.15	0.236	14.33	-0.15	-0.23	
CC	13.0	13.0	13.0	0.00	0.000	13.00	-0.61	-0.69	
CE	15.0	14.0	14.0	0.58	0.118	14.33	-0.15	-0.23	
CJ	15.0	16.0	14.0	1.00	0.236	15.00	0.08	0.00	
CK	14.0	15.0	16.0	1.00	0.236	15.00	0.08	0.00	
CO	15.0	15.0	14.0	0.58	0.118	14.67	-0.03	-0.12	
CP	16.0	15.0	15.0	0.58	0.118	15.33	0.20	0.12	
CQ	16.0	13.0	16.0	1.73	0.354	15.00	0.08	0.00	
CS	17.0	15.0	14.0	1.53	0.354	15.33	0.20	0.12	
CX	17.0	16.0	17.0	0.58	0.118	16.67	0.66	0.58	
D	13.0	14.0	13.0	0.58	0.118	13.33	-0.49	-0.58	
DD	14.0	15.0	14.0	0.58	0.118	14.33	-0.15	-0.23	
DE	15.0	15.0	16.0	0.58	0.118	15.33	0.20	0.12	
DG	15.0	15.0	17.0	1.15	0.236	15.67	0.31	0.23	
DH	16.0	16.0	16.0	0.00	0.000	16.00	0.43	0.35	
DJ	157.0	145.0	170.0	12.50	4.721	157.33	49.39	49.31	×
DL	14.0	13.0	12.0	1.00	0.236	13.00	-0.61	-0.69	
DM	16.0	15.0	15.0	0.58	0.118	15.33	0.20	0.12	
DO	13.0	14.0	12.0	1.00	0.236	13.00	-0.61	-0.69	
DR	16.0	15.0	13.0	1.53	0.354	14.67	-0.03	-0.12	

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Cesium-134

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
DT	15.0	12.0	14.0	1.53	0.354	13.67	-0.38	-0.46	
E	14.0	14.0	14.0	0.00	0.000	14.00	-0.26	-0.35	
EA	15.0	14.0	16.0	1.00	0.236	15.00	0.08	0.00	
EB	13.0	13.0	12.0	0.58	0.118	12.67	-0.73	-0.81	
EH	12.0	13.0	15.0	1.53	0.354	13.33	-0.49	-0.58	
EL	16.0	14.0	16.0	1.15	0.236	15.33	0.20	0.12	
EW	13.0	15.0	11.0	2.00	0.473	13.00	-0.61	-0.69	
EX	17.0	19.0	19.0	1.15	0.236	18.33	1.24	1.15	
EZ	1.0	1.0	1.0	0.00	0.000	1.00	-4.77	-4.85	x
FE	16.0	12.0	15.0	2.08	0.473	14.33	-0.15	-0.23	
FJ	17.0	14.0	17.0	1.73	0.354	16.00	0.43	0.35	
FL	15.0	14.0	14.0	0.58	0.118	14.33	-0.15	-0.23	
FU	13.0	14.0	15.0	1.00	0.236	14.00	-0.26	-0.35	
FZ	15.0	16.0	15.0	0.58	0.118	15.33	0.20	0.12	
GE	12.0	13.0	14.0	1.00	0.236	13.00	-0.61	-0.69	
GI	14.0	14.0	13.0	0.58	0.118	13.67	-0.38	-0.46	
GL	13.0	15.0	14.0	1.00	0.236	14.00	-0.26	-0.35	
HE	15.0	15.0	15.0	0.00	0.000	15.00	0.08	0.00	
HI	15.0	16.0	15.0	0.58	0.118	15.33	0.20	0.12	
HJ	20.0	21.0	16.0	2.65	0.591	19.00	1.47	1.39	
HK	14.0	15.0	14.0	0.58	0.118	14.33	-0.15	-0.23	
HL	15.0	15.0	15.0	0.00	0.000	15.00	0.08	0.00	
HP	1.0	1.0	1.0	0.00	0.000	1.00	-4.77	-4.85	x
HU									.
I	16.0	14.0	15.0	1.00	0.236	15.00	0.08	0.00	
IA	17.0	12.0	13.0	2.65	0.591	14.00	-0.26	-0.35	
IC	18.0	19.0	19.0	0.58	0.118	18.67	1.35	1.27	
IU	16.0	15.0	13.0	1.53	0.354	14.67	-0.03	-0.12	
IW	15.0	12.0	18.0	3.00	0.709	15.00	0.08	0.00	
J	14.0	13.0	14.0	0.58	0.118	13.67	-0.38	-0.46	
JE	13.0	14.0	14.0	0.58	0.118	13.67	-0.38	-0.46	
JG									.
JR	14.0	15.0	14.0	0.58	0.118	14.33	-0.15	-0.23	
JS	20.0	19.0	21.0	1.00	0.236	20.00	1.81	1.73	
JY	16.0	17.0	13.0	2.08	0.473	15.33	0.20	0.12	
K	14.0	14.0	13.0	0.58	0.118	13.67	-0.38	-0.46	
KF									.
KL	14.0	14.0	14.0	0.00	0.000	14.00	-0.26	-0.35	
KM	15.0	13.0	15.0	1.15	0.236	14.33	-0.15	-0.23	
KY	101.0	95.0	98.0	3.21	0.709	97.33	28.60	28.52	x
L	14.0	16.0	20.0	3.06	0.709	16.67	0.66	0.58	
LA									.
LE	13.0	15.0	16.0	1.53	0.354	14.67	-0.03	-0.12	
LF	15.0	15.0	13.0	1.15	0.236	14.33	-0.15	-0.23	
LM									.

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Cesium-134

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
LR	28.0	40.0	44.0	8.33	2.695	37.33	7.82	7.74	×
LT	14.0	14.0	14.0	0.00	0.000	14.00	-0.26	-0.35	
M	12.0	13.0	11.0	1.00	0.236	12.00	-0.96	-1.04	
MA	14.0	14.0	14.0	0.00	0.000	14.00	-0.26	-0.35	
ME	14.0	14.0	14.0	0.00	0.000	14.00	-0.26	-0.35	
ML	171.0	151.0	214.0	32.19	13.271	178.67	56.78	56.70	×
MN									•
MP	13.0	15.0	14.0	1.00	0.236	14.00	-0.26	-0.35	
MQ	15.0	15.0	12.0	1.73	0.354	14.00	-0.26	-0.35	
MS	16.0	14.0	15.0	1.00	0.236	15.00	0.08	0.00	
MT	16.0	16.0	15.0	0.58	0.118	15.67	0.31	0.23	
MV	14.0	16.0	17.0	1.53	0.354	15.67	0.31	0.23	
MY									
N	14.0	15.0	15.0	0.58	0.118	14.67	-0.03	-0.12	•
NB	31.0	33.0	32.0	1.00	0.236	32.00	5.97	5.89	×
NH	19.0	14.0	8.0	5.51	1.570	13.67	-0.38	-0.46	
NI	16.0	12.0	12.0	2.31	0.473	13.33	-0.49	-0.58	
NJ	15.0	14.0	15.0	0.58	0.118	14.67	-0.03	-0.12	
NK	15.0	11.0	10.0	2.65	0.591	12.00	-0.96	-1.04	
NP	14.0	15.0	14.0	0.58	0.118	14.33	-0.15	-0.23	
NZ									
O	15.0	15.0	15.0	0.00	0.000	15.00	0.08	0.00	•
OA	12.0	14.0	14.0	1.15	0.236	13.33	-0.49	-0.58	
OB	15.0	15.0	15.0	0.00	0.000	15.00	0.08	0.00	
OK	13.0	20.0	20.0	4.04	0.827	17.67	1.01	0.92	
OL									
OM									•
OO	11.0	13.0	11.0	1.15	0.236	11.67	-1.07	-1.15	•
OT	30.0	23.0	18.0	6.03	1.795	23.67	3.09	3.00	
OZ									
PB	15.0	16.0	15.0	0.58	0.118	15.33	0.20	0.12	•
PC	13.0	13.0	13.0	0.00	0.000	13.00	-0.61	-0.69	
PD									
PE	16.0	16.0	16.0	0.00	0.000	16.00	0.43	0.35	•
PM	13.0	10.0	14.0	2.08	0.473	12.33	-0.84	-0.92	
PP	9.0	3.0	6.0	3.00	0.709	6.00	-3.03	-3.12	↓
PQ	15.0	15.0	14.0	0.58	0.118	14.67	-0.03	-0.12	
PV	17.0	14.0	14.0	1.73	0.354	15.00	0.08	0.00	
PW									
PX	16.0	15.0	17.0	1.00	0.236	16.00	0.43	0.35	•
PY									
Q	13.0	14.0	15.0	1.00	0.236	14.00	-0.26	-0.35	•
QB	15.0	15.0	16.0	0.58	0.118	15.33	0.20	0.12	
QC									
QK	14.0	14.0	16.0	1.15	0.236	14.67	-0.03	-0.12	•

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↓ = Below control limit

Cesium-134

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
QL	13.0	13.0	11.0	1.15	0.236	12.33	-0.84	-0.92	
QM	16.0	16.0	15.0	0.58	0.118	15.67	0.31	0.23	
QP	15.0	16.0	13.0	1.53	0.354	14.67	-0.03	-0.12	
QT	15.0	16.0	18.0	1.53	0.354	16.33	0.54	0.46	
QX	17.0	17.0	17.0	0.00	0.000	17.00	0.78	0.69	
QZ	14.0	14.0	14.0	0.00	0.000	14.00	-0.26	-0.35	
R	15.0	14.0	14.0	0.58	0.118	14.33	-0.15	-0.23	
RC	18.0	19.0	21.0	1.53	0.354	19.33	1.58	1.50	
RH	16.0	15.0	16.0	0.58	0.118	15.67	0.31	0.23	
RK									•
RN	16.0	17.0	15.0	1.00	0.236	16.00	0.43	0.35	
RO	14.0	16.0	14.0	1.15	0.236	14.67	-0.03	-0.12	
RQ	13.0	13.0	13.0	0.00	0.000	13.00	-0.61	-0.69	
RR	16.0	16.0	16.0	0.00	0.000	16.00	0.43	0.35	
RU	13.0	12.0	13.0	0.58	0.118	12.67	-0.73	-0.81	
RV	13.0	15.0	14.0	1.00	0.236	14.00	-0.26	-0.35	
RZ	15.0	15.0	14.0	0.58	0.118	14.67	-0.03	-0.12	
S	14.0	15.0	16.0	1.00	0.236	15.00	0.08	0.00	
SA	148.0	214.0	214.0	39.26	14.396	191.33	61.17	61.08	×
SC	15.0	13.0	13.0	1.15	0.236	13.67	-0.38	-0.46	
SD	21.0	14.0	16.0	3.61	0.827	17.00	0.78	0.69	
SF	85.0	84.0	88.0	2.08	0.473	85.67	24.56	24.48	×
SI	15.0	13.0	14.0	1.00	0.236	14.00	-0.26	-0.35	
SK	52.0	55.0	57.0	2.52	0.591	54.67	13.82	13.74	×
SM	14.0	12.0	13.0	1.00	0.236	13.00	-0.61	-0.69	
SN	16.0	14.0	13.0	1.53	0.354	14.33	-0.15	-0.23	
SR	12.0	12.0	14.0	1.15	0.236	12.67	-0.73	-0.81	
SS	14.0	13.0	15.0	1.00	0.236	14.00	-0.26	-0.35	
ST	17.0	14.0	16.0	1.53	0.354	15.67	0.31	0.23	
SU	15.0	15.0	16.0	0.58	0.118	15.33	0.20	0.12	
SV	31.0	28.0	19.0	6.03	1.795	25.33	3.66	3.58	×
SW	15.0	14.0	14.0	0.58	0.118	14.33	-0.15	-0.23	
SY	15.0	16.0	15.0	0.58	0.118	15.33	0.20	0.12	
SZ	16.0	16.0	17.0	0.58	0.118	16.33	0.54	0.46	
T	16.0	13.0	13.0	1.73	0.354	14.00	-0.26	-0.35	
TA	15.0	14.0	14.0	0.58	0.118	14.33	-0.15	-0.23	
TB	18.0	17.0	15.0	1.53	0.354	16.67	0.66	0.58	
TC									•
TD									•
TE									•
TF									•
TG	15.0	16.0	18.0	1.53	0.354	16.33	0.54	0.46	
TI	14.0	13.0	14.0	0.58	0.118	13.67	-0.38	-0.46	
TK									•
TL	14.0	11.0	13.0	1.53	0.354	12.67	-0.73	-0.81	

• = No data submitted

TAG SYMBOLS

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↓ = Below control limit

Cesium-134

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
TO	38.0	29.0	32.0	2.08	0.473	31.33	5.74	5.66	x
U	16.0	14.0	15.0	1.00	0.236	15.00	0.08	0.00	
W	12.0	12.0	11.0	0.58	0.118	11.67	-1.07	-1.15	
X	15.0	13.0	13.0	1.15	0.236	13.67	-0.38	-0.46	
Y	15.0	15.0	14.0	0.58	0.118	14.67	-0.03	-0.12	
Z	14.0	13.0	14.0	0.58	0.118	13.67	-0.38	-0.46	

Data sorted by Laboratory Average

Average	Tag	Lab	Average	Tag	Lab	Average	Tag	Lab
1.00	x	HP	13.67		JE	14.33		CE
1.00	x	EZ	13.67		J	14.33		CA
6.00	↓	PP	13.67		GI	14.67		Y
11.67		W	13.67		DT	14.67		RZ
11.67		OO	13.67		BO	14.67		RO
12.00		NK	14.00		T	14.67		QP
12.00		M	14.00		SS	14.67		QK
12.33		QL	14.00		SI	14.67		PQ
12.33		PM	14.00		RV	14.67		NJ
12.33		AF	14.00		QZ	14.67		N
12.67		TL	14.00		Q	14.67		LE
12.67		SR	14.00		MQ	14.67		IU
12.67		RU	14.00		MP	14.67		DR
12.67		EB	14.00		ME	14.67		CO
12.67		AN	14.00		MA	14.67		AE
13.00		SM	14.00		LT	14.67		A
13.00		RQ	14.00		KL	15.00		U
13.00		PC	14.00		IA	15.00		S
13.00		GE	14.00		GL	15.00		PV
13.00		EW	14.00		FU	15.00		OB
13.00		DO	14.00		E	15.00		O
13.00		DL	14.00		BB	15.00		MS
13.00		CC	14.00		AJ	15.00		IW
13.00		BM	14.00		AI	15.00		I
13.33		OA	14.33		TA	15.00		HL
13.33		NI	14.33		SW	15.00		HE
13.33		EH	14.33		SN	15.00		EA
13.33		D	14.33		R	15.00		CQ
13.33		BL	14.33		NP	15.00		CK
13.33		BH	14.33		LF	15.00		CJ
13.67		Z	14.33		KM	15.00		BC
13.67		X	14.33		JR	15.00		AW
13.67		TI	14.33		HK	15.00		AP
13.67		SC	14.33		FL	15.33		SY
13.67		NH	14.33		FE	15.33		SU
13.67		K	14.33		DD	15.33		QB

• = No data submitted

TAG SYMBOLS

↑ = Above control limit

∅ = Insufficient data

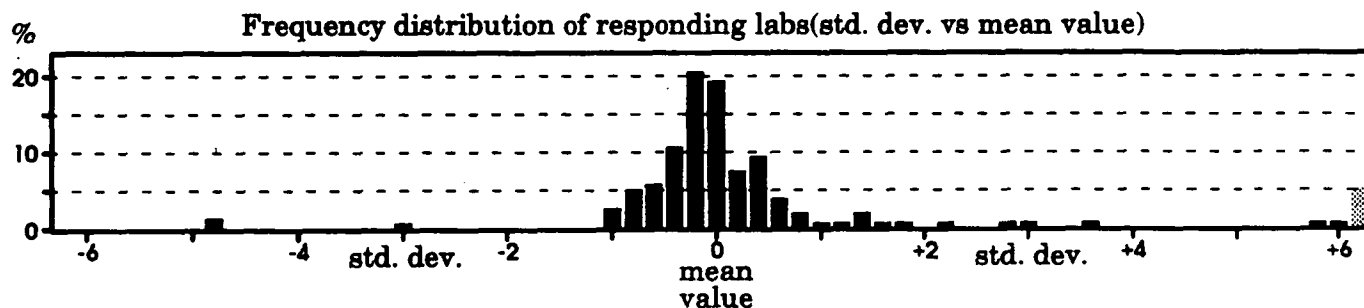
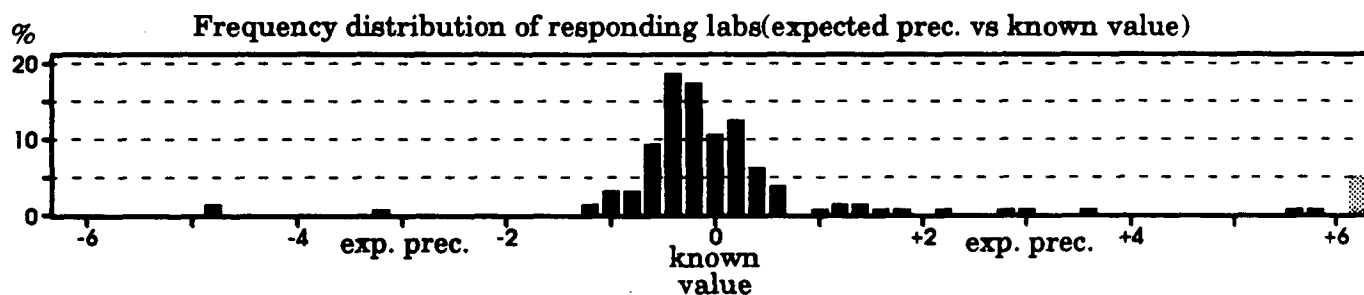
x = Determined to be an outlier

↓ = Below control limit

Cesium-134

Data sorted by Laboratory Average

Average	Tag	Lab	Average	Tag	Lab	Average	Tag	Lab
15.33		PB	16.00		RN	19.00		HJ
15.33		JY	16.00		PX	19.00		AY
15.33		HI	16.00		PE	19.33		RC
15.33		FZ	16.00		FJ	20.00		JS
15.33		EL	16.00		DH	21.33		AZ
15.33		DM	16.00		C	23.00		AL
15.33		DE	16.33		TG	23.67		OT
15.33		CS	16.33		SZ	25.33	x	SV
15.33		CP	16.33		QT	31.33	x	TO
15.67		ST	16.67		TB	32.00	x	NB
15.67		RH	16.67		L	37.33	x	LR
15.67		QM	16.67		CX	54.67	x	SK
15.67		MV	17.00		SD	85.67	x	SF
15.67		MT	17.00		QX	97.33	x	KX
15.67		DG	17.00		AU	98.33	x	AK
15.67		BK	17.67		OK	157.33	x	DJ
15.67		BA	18.33		EX	178.67	x	ML
16.00		RR	18.67		IC	191.33	x	SA



• ≡ No data submitted

TAG SYMBOLS

↑ ≡ Above control limit

∅ ≡ Insufficient data

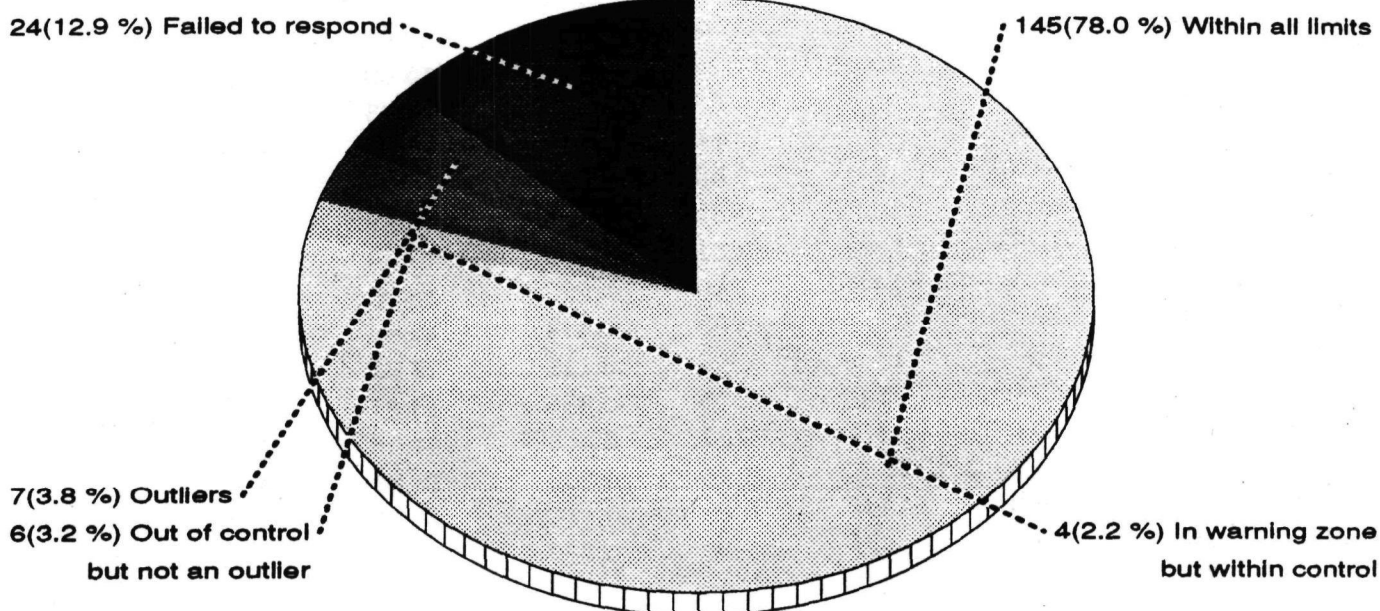
x ≡ Determined to be an outlier

↓ ≡ Below control limit

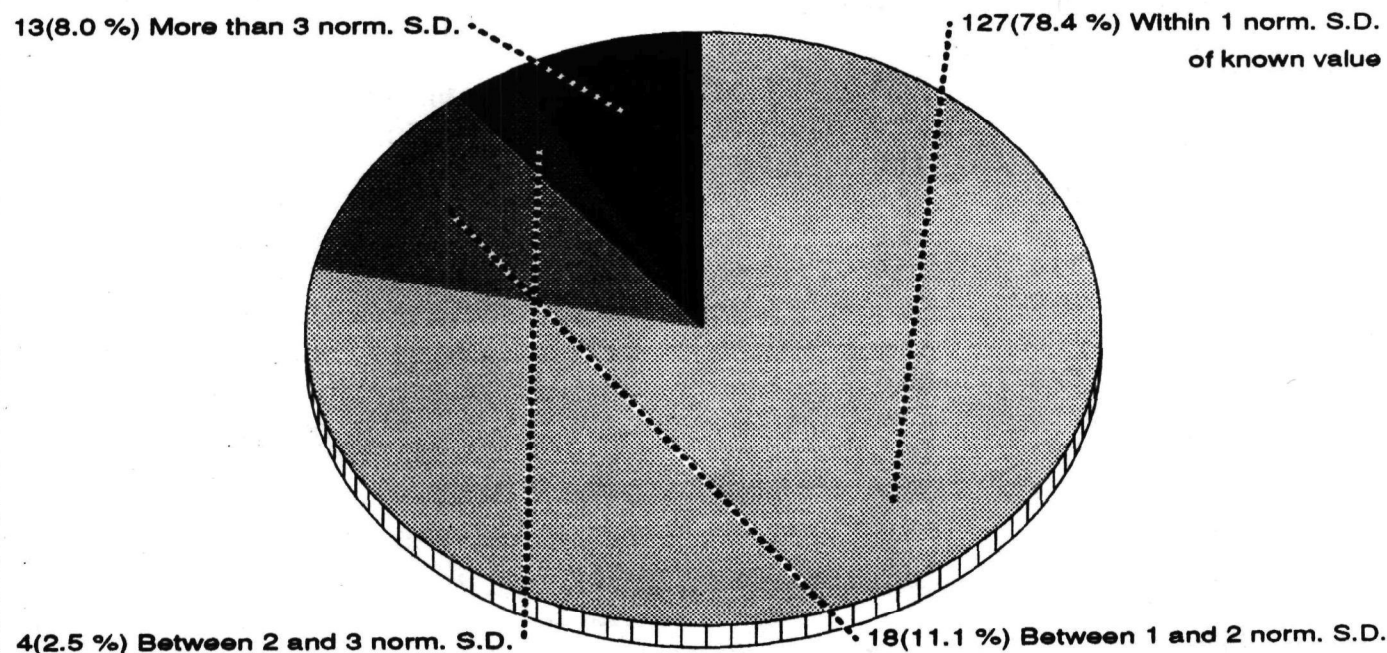
Cesium-137
Statistical Summary

186 Participants

The known value of this nuclide is 15.0 pCi/l with an expected precision of 5.0; the control limits are 6.3 to 23.7; the warning regions are 6.3 to 9.2 and 20.8 to 23.7



Statistic	Respondents	Non-outliers
Mean	246.49	Grand Avg 16.11
Std. Dev.	2902.99	3.83
Variance	8427325.37	14.69
% Coef. of Var.	1177.72	23.80
% deviation of mean from known value	1543.28	7.38
Norm. dev. of mean from known value	0.08	0.29
Median	15.33	15.33
% deviation of median from known value	2.22	2.22
Norm. dev. of median from known value	0.00	0.09



Cesium-137

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known) Tag	
A	17.0	15.0	16.0	1.00	0.236	16.00	-0.04	0.35
AB								•
AE	20.0	21.0	18.0	1.53	0.354	19.67	1.23	1.62
AF	16.0	14.0	15.0	1.00	0.236	15.00	-0.38	0.00
AI	16.0	15.0	15.0	0.58	0.118	15.33	-0.27	0.12
AJ	16.0	16.0	17.0	0.58	0.118	16.33	0.08	0.46
AK	14.0	15.0	14.0	0.58	0.118	14.33	-0.61	-0.23
AL	18.0	13.0	16.0	2.52	0.591	15.67	-0.15	0.23
AN	18.0	22.0	18.0	2.31	0.473	19.33	1.12	1.50
AP	15.0	16.0	14.0	1.00	0.236	15.00	-0.38	0.00
AU	19.0	15.0	18.0	2.08	0.473	17.33	0.42	0.81
AW	16.0	15.0	15.0	0.58	0.118	15.33	-0.27	0.12
AY	15.0	17.0	15.0	1.15	0.236	15.67	-0.15	0.23
AZ	20.0	20.0	24.0	2.31	0.473	21.33	1.81	2.19
BA	16.0	14.0	16.0	1.15	0.236	15.33	-0.27	0.12
BB	16.0	15.0	15.0	0.58	0.118	15.33	-0.27	0.12
BC	16.0	14.0	15.0	1.00	0.236	15.00	-0.38	0.00
BG	17.0	23.0	17.0	3.46	0.709	19.00	1.00	1.39
BH	18.0	16.0	19.0	1.53	0.354	17.67	0.54	0.92
BK	17.0	18.0	16.0	1.00	0.236	17.00	0.31	0.69
BL	16.0	14.0	14.0	1.15	0.236	14.67	-0.50	-0.12
BM	16.0	16.0	15.0	0.58	0.118	15.67	-0.15	0.23
BO	16.0	14.0	12.0	2.00	0.473	14.00	-0.73	-0.35
BW								•
C	16.0	15.0	15.0	0.58	0.118	15.33	-0.27	0.12
CA	15.0	14.0	16.0	1.00	0.236	15.00	-0.38	0.00
CC	14.0	14.0	14.0	0.00	0.000	14.00	-0.73	-0.35
CE	18.0	15.0	15.0	1.73	0.354	16.00	-0.04	0.35
CJ	17.0	15.0	16.0	1.00	0.236	16.00	-0.04	0.35
CK	16.0	16.0	18.0	1.15	0.236	16.67	0.19	0.58
CO	22.0	18.0	15.0	3.51	0.827	18.33	0.77	1.15
CP	15.0	15.0	15.0	0.00	0.000	15.00	-0.38	0.00
CQ	17.0	15.0	16.0	1.00	0.236	16.00	-0.04	0.35
CS	16.0	17.0	17.0	0.58	0.118	16.67	0.19	0.58
CX	26.0	25.0	23.0	1.53	0.354	24.67	2.97	3.35
D	15.0	15.0	14.0	0.58	0.118	14.67	-0.50	-0.12
DD	15.0	15.0	16.0	0.58	0.118	15.33	-0.27	0.12
DE	15.0	16.0	16.0	0.58	0.118	15.67	-0.15	0.23
DG	18.0	11.0	17.0	3.79	0.827	15.33	-0.27	0.12
DH	15.0	14.0	15.0	0.58	0.118	14.67	-0.50	-0.12
DJ	214.0	214.0	213.0	0.58	0.118	213.67	68.44	68.82 ×
DL	13.0	14.0	15.0	1.00	0.236	14.00	-0.73	-0.35
DM	15.0	15.0	14.0	0.58	0.118	14.67	-0.50	-0.12
DO	14.0	16.0	18.0	2.00	0.473	16.00	-0.04	0.35
DR	16.0	14.0	17.0	1.53	0.354	15.67	-0.15	0.23

• = No data submitted

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Cesium-137

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
DT	14.0	12.0	16.0	2.00	0.473	14.00	-0.73	-0.35	
E	14.0	15.0	13.0	1.00	0.236	14.00	-0.73	-0.35	
EA	14.0	15.0	14.0	0.58	0.118	14.33	-0.61	-0.23	
EB	15.0	14.0	15.0	0.58	0.118	14.67	-0.50	-0.12	
EH	15.0	15.0	13.0	1.15	0.236	14.33	-0.61	-0.23	
EL	14.0	14.0	13.0	0.58	0.118	13.67	-0.85	-0.46	
EW	14.0	11.0	16.0	2.52	0.591	13.67	-0.85	-0.46	
EX	18.0	19.0	15.0	2.08	0.473	17.33	0.42	0.81	
EZ	46.0	53.0	47.0	3.79	0.827	48.67	11.28	11.66	×
FE	17.0	19.0	21.0	2.00	0.473	19.00	1.00	1.39	
FJ	15.0	11.0	11.0	2.31	0.473	12.33	-1.31	-0.92	
FL	16.0	15.0	18.0	1.53	0.354	16.33	0.08	0.46	
FU	15.0	15.0	15.0	0.00	0.000	15.00	-0.38	0.00	
FZ	13.0	18.0	15.0	2.52	0.591	15.33	-0.27	0.12	
GE	15.0	14.0	13.0	1.00	0.236	14.00	-0.73	-0.35	
GI	14.0	15.0	15.0	0.58	0.118	14.67	-0.50	-0.12	
GL	15.0	15.0	16.0	0.58	0.118	15.33	-0.27	0.12	
HE	15.0	15.0	15.0	0.00	0.000	15.00	-0.38	0.00	
HI	13.0	16.0	15.0	1.53	0.354	14.67	-0.50	-0.12	
HJ	19.0	21.0	15.0	3.06	0.709	18.33	0.77	1.15	
HK	16.0	14.0	15.0	1.00	0.236	15.00	-0.38	0.00	
HL	17.0	19.0	16.0	1.53	0.354	17.33	0.42	0.81	
HP	1.0	1.0	1.0	0.00	0.000	1.00	-5.23	-4.85	×
HU									•
I	17.0	17.0	14.0	1.73	0.354	16.00	-0.04	0.35	
IA	18.0	16.0	14.0	2.00	0.473	16.00	-0.04	0.35	
IC	14.0	15.0	15.0	0.58	0.118	14.67	-0.50	-0.12	
IU	15.0	15.0	16.0	0.58	0.118	15.33	-0.27	0.12	
IW	18.0	20.0	16.0	2.00	0.473	18.00	0.66	1.04	
J	15.0	14.0	15.0	0.58	0.118	14.67	-0.50	-0.12	
JE	14.0	14.0	15.0	0.58	0.118	14.33	-0.61	-0.23	
JG									•
JR	25.0	25.0	25.0	0.00	0.000	25.00	3.08	3.46	↑
JS	21.0	23.0	17.0	3.06	0.709	20.33	1.46	1.85	
JY	15.0	17.0	16.0	1.00	0.236	16.00	-0.04	0.35	
K	18.0	15.0	15.0	1.73	0.354	16.00	-0.04	0.35	
KF									•
KL	15.0	16.0	16.0	0.58	0.118	15.67	-0.15	0.23	
KM	14.0	14.0	15.0	0.58	0.118	14.33	-0.61	-0.23	
KX	15.0	17.0	17.0	1.15	0.236	16.33	0.08	0.46	
L	15.0	16.0	14.0	1.00	0.236	15.00	-0.38	0.00	
LA									•
LE	7.0	12.0	21.0	7.09	2.245	13.33	-0.96	-0.58	
LF	17.0	12.0	14.0	2.52	0.591	14.33	-0.61	-0.23	
LM									•

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Cesium-137

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
LR	36.0	18.0	32.0	9.45	3.146	28.67	4.35	4.73	↑
LT	14.0	14.0	14.0	0.00	0.000	14.00	-0.73	-0.35	
M	15.0	14.0	15.0	0.58	0.118	14.67	-0.50	-0.12	
MA	16.0	16.0	15.0	0.58	0.118	15.67	-0.15	0.23	
ME	18.0	17.0	16.0	1.00	0.236	17.00	0.31	0.69	
ML	39600.0	31800.0	39500.0	4474.75	1754.221	36966.67	12800.05	12800.43	×
MN									•
MP	15.0	15.0	14.0	0.58	0.118	14.67	-0.50	-0.12	
MQ	17.0	17.0	16.0	0.58	0.118	16.67	0.19	0.58	
MS	18.0	17.0	19.0	1.00	0.236	18.00	0.66	1.04	
MT	15.0	15.0	15.0	0.00	0.000	15.00	-0.38	0.00	
MV	21.0	19.0	18.0	1.53	0.354	19.33	1.12	1.50	
MY									•
N	14.0	14.0	17.0	1.73	0.354	15.00	-0.38	0.00	
NB	28.0	36.0	30.0	4.16	0.945	31.33	5.27	5.66	×
NH	24.0	24.0	22.0	1.15	0.236	23.33	2.50	2.89	
NI	16.0	14.0	16.0	1.15	0.236	15.33	-0.27	0.12	
NJ	25.0	25.0	27.0	1.15	0.236	25.67	3.31	3.70	↑
NK	13.0	16.0	14.0	1.53	0.354	14.33	-0.61	-0.23	
NP	14.0	16.0	15.0	1.00	0.236	15.00	-0.38	0.00	
NZ									•
O	16.0	16.0	16.0	0.00	0.000	16.00	-0.04	0.35	
OA	16.0	15.0	16.0	0.58	0.118	15.67	-0.15	0.23	
OB	14.0	15.0	14.0	0.58	0.118	14.33	-0.61	-0.23	
OK	28.0	24.0	23.0	2.65	0.591	25.00	3.08	3.46	↑
OL									•
OM									•
OO	14.0	16.0	13.0	1.53	0.354	14.33	-0.61	-0.23	
OT	26.0	21.0	15.0	5.51	1.570	20.67	1.58	1.96	
OZ									•
PB	15.0	15.0	15.0	0.00	0.000	15.00	-0.38	0.00	
PC	14.0	16.0	16.0	1.15	0.236	15.33	-0.27	0.12	
PD									•
PE	14.0	13.0	13.0	0.58	0.118	13.33	-0.96	-0.58	
PM	17.0	16.0	19.0	1.53	0.354	17.33	0.42	0.81	
PP	8.0	7.0	9.0	1.00	0.236	8.00	-2.81	-2.42	
PQ									•
PV	12.0	13.0	13.0	0.58	0.118	12.67	-1.19	-0.81	
PW									•
PX	14.0	15.0	14.0	0.58	0.118	14.33	-0.61	-0.23	
PY									•
Q	13.0	15.0	18.0	2.52	0.591	15.33	-0.27	0.12	
QB	17.0	17.0	13.0	2.31	0.473	15.67	-0.15	0.23	
QC									•
QK	15.0	15.0	16.0	0.58	0.118	15.33	-0.27	0.12	

• = No data submitted

∅ = Insufficient data

TAG SYMBOLS

× = Determined to be an outlier

↑ = Above control limit

↓ = Below control limit

Cesium-137

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
QL	13.0	13.0	16.0	1.73	0.354	14.00	-0.73	-0.35	
QM	23.0	23.0	12.0	6.35	1.570	19.33	1.12	1.50	
QP	15.0	15.0	14.0	0.58	0.118	14.67	-0.50	-0.12	
QT	15.0	14.0	16.0	1.00	0.236	15.00	-0.38	0.00	
QX	18.0	18.0	18.0	0.00	0.000	18.00	0.66	1.04	
QZ	15.0	16.0	15.0	0.58	0.118	15.33	-0.27	0.12	
R	15.0	15.0	16.0	0.58	0.118	15.33	-0.27	0.12	
RC	22.0	24.0	23.0	1.00	0.236	23.00	2.39	2.77	
RH	15.0	15.0	15.0	0.00	0.000	15.00	-0.38	0.00	
RK									•
RN	16.0	15.0	19.0	2.08	0.473	16.67	0.19	0.58	
RO	19.0	15.0	15.0	2.31	0.473	16.33	0.08	0.46	
RQ	15.0	15.0	15.0	0.00	0.000	15.00	-0.38	0.00	
RR	16.0	14.0	15.0	1.00	0.236	15.00	-0.38	0.00	
RU	13.0	13.0	13.0	0.00	0.000	13.00	-1.08	-0.69	
RV	17.0	11.0	15.0	3.06	0.709	14.33	-0.61	-0.23	
RZ	15.0	15.0	13.0	1.15	0.236	14.33	-0.61	-0.23	
S	15.0	16.0	16.0	0.58	0.118	15.67	-0.15	0.23	
SA	117.0	125.0	88.0	19.47	7.421	110.00	32.53	32.91	×
SC	15.0	17.0	17.0	1.15	0.236	16.33	0.08	0.46	
SD	15.0	15.0	16.0	0.58	0.118	15.33	-0.27	0.12	
SF	12.0	12.0	10.0	1.15	0.236	11.33	-1.65	-1.27	
SI	18.0	16.0	20.0	2.00	0.473	18.00	0.66	1.04	
SK	73.0	61.0	57.0	8.33	2.695	63.67	16.48	16.86	×
SM	15.0	15.0	14.0	0.58	0.118	14.67	-0.50	-0.12	
SN	19.0	18.0	10.0	4.93	1.120	15.67	-0.15	0.23	
SR	12.0	18.0	16.0	3.06	0.709	15.33	-0.27	0.12	
SS	15.0	18.0	16.0	1.53	0.354	16.33	0.08	0.46	
ST	16.0	16.0	15.0	0.58	0.118	15.67	-0.15	0.23	
SU	15.0	16.0	16.0	0.58	0.118	15.67	-0.15	0.23	
SV	26.0	17.0	16.0	5.51	1.345	19.67	1.23	1.62	
SW	16.0	13.0	15.0	1.53	0.354	14.67	-0.50	-0.12	
SY	13.0	17.0	17.0	2.31	0.473	15.67	-0.15	0.23	
SZ	16.0	17.0	16.0	0.58	0.118	16.33	0.08	0.46	
T	16.0	16.0	17.0	0.58	0.118	16.33	0.08	0.46	
TA	15.0	15.0	15.0	0.00	0.000	15.00	-0.38	0.00	
TB	16.0	17.0	16.0	0.58	0.118	16.33	0.08	0.46	
TC									•
TD									•
TE									•
TF									•
TG	19.0	21.0	20.0	1.00	0.236	20.00	1.35	1.73	
TI	20.0	16.0	16.0	2.31	0.473	17.33	0.42	0.81	
TK									•
TL	20.0	16.0	16.0	2.31	0.473	17.33	0.42	0.81	

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TAG SYMBOLS

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↓ = Below control limit

Cesium-137

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
TO	27.0	28.0	27.0	0.58	0.118	27.33	3.89	4.27	↑
U	16.0	14.0	12.0	2.00	0.473	14.00	-0.73	-0.35	
W	14.0	7.0	13.0	3.79	0.827	11.33	-1.65	-1.27	
X	18.0	14.0	18.0	2.31	0.473	16.67	0.19	0.58	
Y	16.0	15.0	15.0	0.58	0.118	15.33	-0.27	0.12	
Z	14.0	14.0	17.0	1.73	0.354	15.00	-0.38	0.00	

Data sorted by Laboratory Average

Average	Tag	Lab	Average	Tag	Lab	Average	Tag	Lab
1.00	×	HP	14.67		M	15.33		PC
8.00		PP	14.67		J	15.33		NI
11.33		W	14.67		IC	15.33		IU
11.33		SF	14.67		HI	15.33		GL
12.33		FJ	14.67		GI	15.33		FZ
12.67		PV	14.67		EB	15.33		DG
13.00		RU	14.67		DM	15.33		DD
13.33		PE	14.67		DH	15.33		C
13.33		LE	14.67		D	15.33		BB
13.67		EW	14.67		BL	15.33		BA
13.67		EL	15.00		Z	15.33		AW
14.00		U	15.00		TA	15.33		AI
14.00		QL	15.00		RR	15.67		SY
14.00		LT	15.00		RQ	15.67		SU
14.00		GE	15.00		RH	15.67		ST
14.00		E	15.00		QT	15.67		SN
14.00		DT	15.00		PB	15.67		S
14.00		DL	15.00		NP	15.67		QB
14.00		CC	15.00		N	15.67		OA
14.00		BO	15.00		MT	15.67		MA
14.33		RZ	15.00		L	15.67		KL
14.33		RV	15.00		HK	15.67		DR
14.33		PX	15.00		HE	15.67		DE
14.33		OO	15.00		FU	15.67		BM
14.33		OB	15.00		CP	15.67		AY
14.33		NK	15.00		CA	15.67		AL
14.33		LF	15.00		BC	16.00		O
14.33		KM	15.00		AP	16.00		K
14.33		JE	15.00		AF	16.00		JY
14.33		EH	15.33		Y	16.00		IA
14.33		EA	15.33		SR	16.00		I
14.33		AK	15.33		SD	16.00		DO
14.67		SW	15.33		R	16.00		CQ
14.67		SM	15.33		QZ	16.00		CJ
14.67		QP	15.33		QK	16.00		CE
14.67		MP	15.33		Q	16.00		A

• = No data submitted

TAG SYMBOLS

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× = Determined to be an outlier

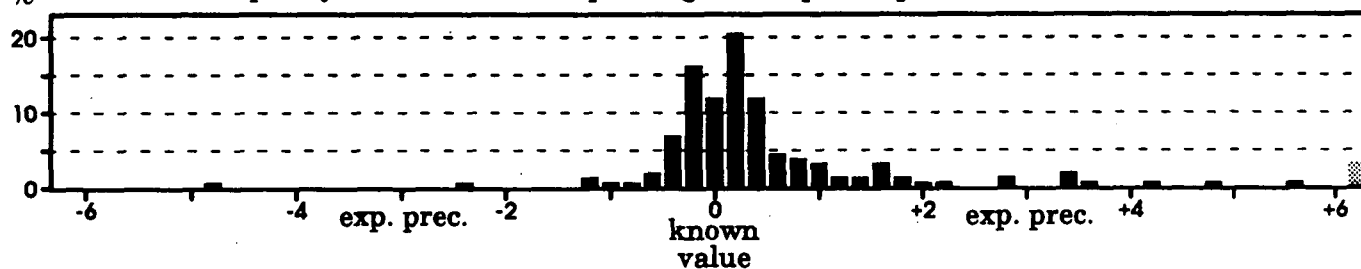
↓ = Below control limit

Cesium-137

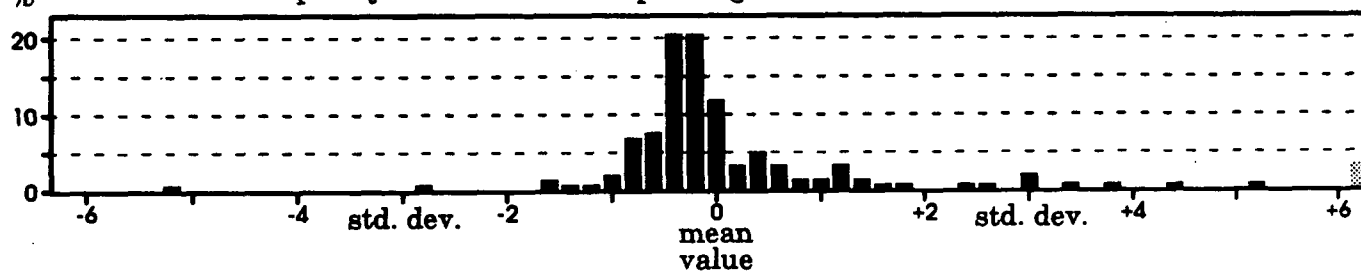
Data sorted by Laboratory Average

Average	Tag	Lab	Average	Tag	Lab	Average	Tag	Lab
16.33		TB	17.33		PM	20.00		TG
16.33		T	17.33		HL	20.33		JS
16.33		SZ	17.33		EX	20.67		OT
16.33		SS	17.33		AU	21.33		AZ
16.33		SC	17.67		BH	23.00		RC
16.33		RO	18.00		SI	23.33		NH
16.33		KX	18.00		QX	24.67	↑↑	CX
16.33		FL	18.00		MS	25.00	↑↑	OK
16.33		AJ	18.00		IW	25.00	↑↑	JR
16.67		X	18.33		HJ	25.67	↑↑	NJ
16.67		RN	18.33		CO	27.33	↑↑	TO
16.67		MQ	19.00		FE	28.67	↑↑	LR
16.67		CS	19.00		BG	31.33	×	NB
16.67		CK	19.33		QM	48.67	×	EZ
17.00		ME	19.33		MV	63.67	×	SK
17.00		BK	19.33		AN	110.00	×	SA
17.33		TL	19.67		SV	213.67	×	DJ
17.33		TI	19.67		AE	36966.67	×	ML

Frequency distribution of responding labs(expected prec. vs known value)



Frequency distribution of responding labs(std. dev. vs mean value)



• ≡ No data submitted

∅ ≡ Insufficient data

TAG SYMBOLS

× ≡ Determined to be an outlier

↑↑ ≡ Above control limit

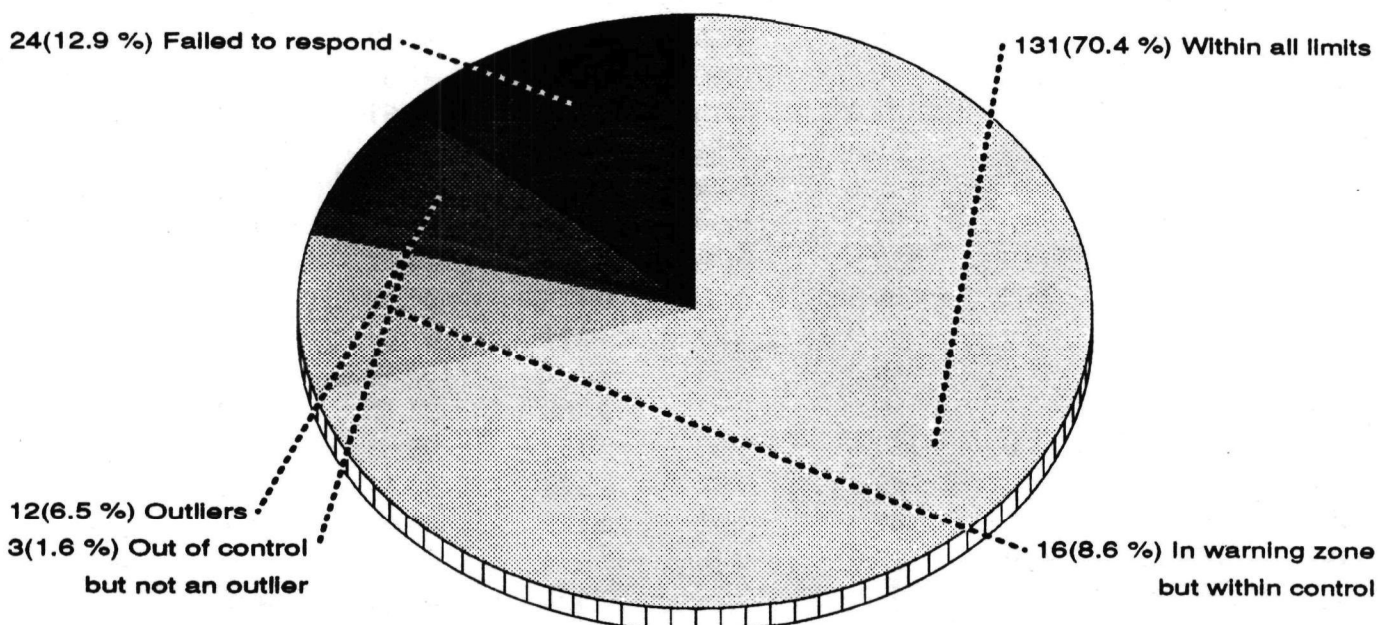
↓↓ ≡ Below control limit

Barium-133

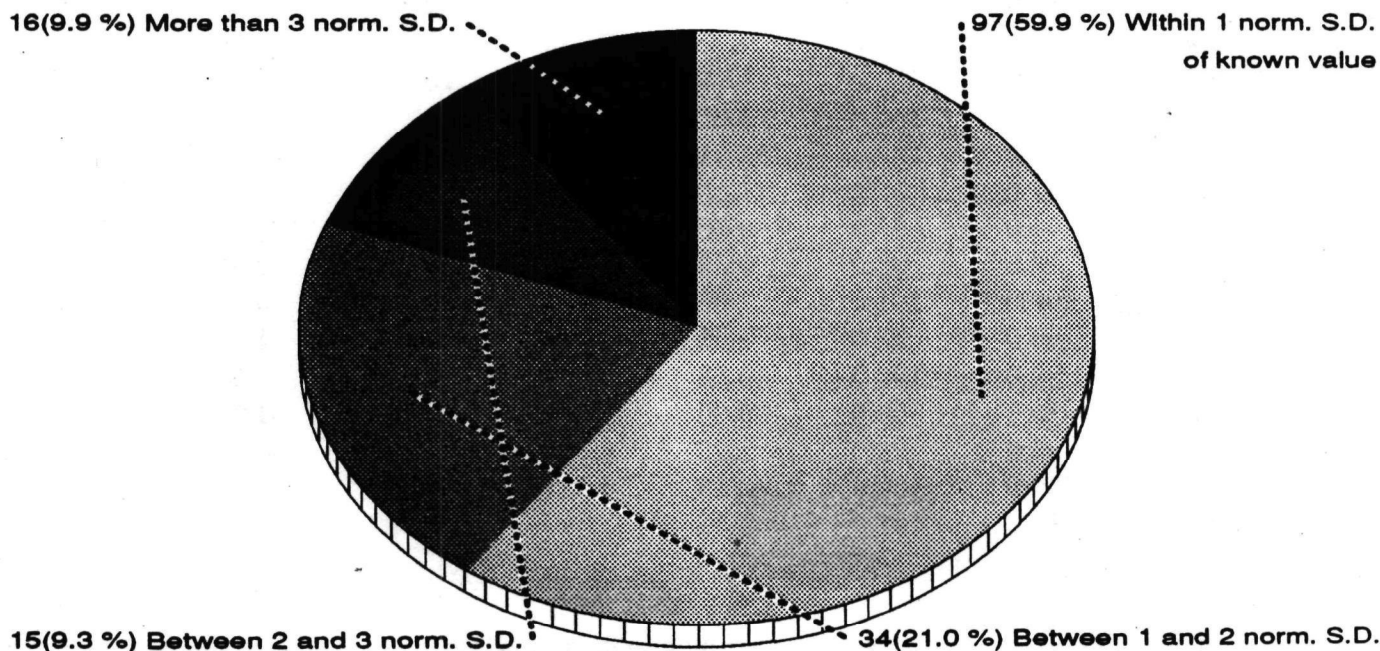
Statistical Summary

186 Participants

The known value of this nuclide is **98.0 pCi/l** with an expected precision of **10.0**; the control limits are 80.7 to 115.3; the warning regions are 80.7 to 86.4 and 109.6 to 115.3



Statistic	Respondents	Non-outliers
Mean	96.59	Grand Avg 96.17
Std. Dev.	24.98	7.10
Variance	624.06	50.38
% Coef. of Var.	25.86	7.38
% deviation of mean from known value	-1.43	-1.86
Norm. dev. of mean from known value	-0.06	-0.26
Median	96.83	96.83
% deviation of median from known value	-1.19	-1.19
Norm. dev. of median from known value	-0.05	-0.16



Barium-133

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
A	126.0	110.0	118.0	8.00	0.945	118.00	3.78	3.46	↑
AB									•
AE	85.0	85.0	83.0	1.15	0.118	84.33	-2.05	-2.37	
AF	93.0	93.0	92.0	0.58	0.059	92.67	-0.61	-0.92	
AI	89.0	91.0	89.0	1.15	0.118	89.67	-1.13	-1.44	
AJ	84.0	85.0	85.0	0.58	0.059	84.67	-1.99	-2.31	
AK	15.0	14.0	14.0	0.58	0.059	14.33	-14.18	-14.49	×
AL	101.0	89.0	94.0	6.03	0.709	94.67	-0.26	-0.58	
AN	117.0	108.0	119.0	5.86	0.650	114.67	3.20	2.89	
AP	94.0	95.0	93.0	1.00	0.118	94.00	-0.38	-0.69	
AU	99.0	98.0	96.0	1.53	0.177	97.67	0.26	-0.06	
AW	100.0	102.0	99.0	1.53	0.177	100.33	0.72	0.40	
AY	97.0	103.0	90.0	6.51	0.768	96.67	0.09	-0.23	
AZ	87.0	95.0	114.0	13.87	2.133	98.67	0.43	0.12	
BA	98.0	96.0	96.0	1.15	0.118	96.67	0.09	-0.23	
BB	90.0	89.0	87.0	1.53	0.177	88.67	-1.30	-1.62	
BC	100.0	94.0	92.0	4.16	0.473	95.33	-0.15	-0.46	
BG	67.0	64.0	74.0	5.13	0.591	68.33	-4.82	-5.14	×
BH	92.0	95.0	96.0	2.08	0.236	94.33	-0.32	-0.64	
BK	99.0	102.0	105.0	3.00	0.354	102.00	1.01	0.69	
BL	99.0	97.0	93.0	3.06	0.354	96.33	0.03	-0.29	
BM	103.0	99.0	98.0	2.65	0.295	100.00	0.66	0.35	
BO	86.0	82.0	93.0	5.57	0.650	87.00	-1.59	-1.91	
BW									•
C	100.0	97.0	98.0	1.53	0.177	98.33	0.37	0.06	
CA	89.0	90.0	99.0	5.51	0.591	92.67	-0.61	-0.92	
CC	87.0	87.0	88.0	0.58	0.059	87.33	-1.53	-1.85	
CE	125.0	115.0	123.0	5.29	0.591	121.00	4.30	3.98	×
CJ	87.0	99.0	94.0	6.03	0.709	93.33	-0.49	-0.81	
CK	90.0	94.0	91.0	2.08	0.236	91.67	-0.78	-1.10	
CO	93.0	102.0	95.0	4.73	0.532	96.67	0.09	-0.23	
CP	100.0	102.0	102.0	1.15	0.118	101.33	0.89	0.58	
CQ	98.0	100.0	104.0	3.06	0.354	100.67	0.78	0.46	
CS	87.0	80.0	107.0	14.01	2.133	91.33	-0.84	-1.15	
CX	97.0	97.0	95.0	1.15	0.118	96.33	0.03	-0.29	
D	92.0	91.0	92.0	0.58	0.059	91.67	-0.78	-1.10	
DD	92.0	93.0	93.0	0.58	0.059	92.67	-0.61	-0.92	
DE	99.0	100.0	101.0	1.00	0.118	100.00	0.66	0.35	
DG	103.0	105.0	98.0	3.61	0.413	102.00	1.01	0.69	
DH	99.0	99.0	100.0	0.58	0.059	99.33	0.55	0.23	
DJ	98.0	80.0	89.0	9.00	1.120	89.00	-1.24	-1.56	
DL	95.0	94.0	93.0	1.00	0.118	94.00	-0.38	-0.69	
DM	97.0	100.0	102.0	2.52	0.295	99.67	0.61	0.29	
DO	99.0	88.0	97.0	5.86	0.650	94.67	-0.26	-0.58	
DR									•

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Barium-133

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
DT	106.0	93.0	100.0	6.51	0.768	99.67	0.61	0.29	
E	102.0	100.0	95.0	3.61	0.413	99.00	0.49	0.17	
EA	98.0	100.0	98.0	1.15	0.118	98.67	0.43	0.12	
EB	90.0	91.0	91.0	0.58	0.059	90.67	-0.95	-1.27	
EH	100.0	101.0	101.0	0.58	0.059	100.67	0.78	0.46	
EL	101.0	102.0	97.0	2.65	0.295	100.00	0.66	0.35	
EW	90.0	89.0	95.0	3.21	0.354	91.33	-0.84	-1.15	
EX	103.0	108.0	105.0	2.52	0.295	105.33	1.59	1.27	
EZ	109.0	87.0	103.0	11.37	1.570	99.67	0.61	0.29	
FE	95.0	98.0	100.0	2.52	0.295	97.67	0.26	-0.06	
FJ	102.0	101.0	103.0	1.00	0.118	102.00	1.01	0.69	
FL	108.0	96.0	98.0	6.43	0.709	100.67	0.78	0.46	
FU	95.0	97.0	99.0	2.00	0.236	97.00	0.14	-0.17	
FZ	100.0	97.0	96.0	2.08	0.236	97.67	0.26	-0.06	
GE	93.0	94.0	95.0	1.00	0.118	94.00	-0.38	-0.69	
GI	93.0	96.0	91.0	2.52	0.295	93.33	-0.49	-0.81	
GL	96.0	99.0	100.0	2.08	0.236	98.33	0.37	0.06	
HE	99.0	100.0	100.0	0.58	0.059	99.67	0.61	0.29	
HI	95.0	95.0	91.0	2.31	0.236	93.67	-0.43	-0.75	
HJ	104.0	104.0	104.0	0.00	0.000	104.00	1.36	1.04	
HK	94.0	94.0	94.0	0.00	0.000	94.00	-0.38	-0.69	
HL	98.0	96.0	99.0	1.53	0.177	97.67	0.26	-0.06	
HP	9.0	9.0	9.0	0.00	0.000	9.00	-15.10	-15.42	×
HU									•
I	97.0	97.0	99.0	1.15	0.118	97.67	0.26	-0.06	
IA	115.0	112.0	114.0	1.53	0.177	113.67	3.03	2.71	
IC	100.0	99.0	99.0	0.58	0.059	99.33	0.55	0.23	
IU	100.0	90.0	96.0	5.03	0.591	95.33	-0.15	-0.46	
IW	91.0	100.0	88.0	6.24	0.709	93.00	-0.55	-0.87	
J	102.0	99.0	99.0	1.73	0.177	100.00	0.66	0.35	
JE	93.0	97.0	94.0	2.08	0.236	94.67	-0.26	-0.58	
JG									•
JR	84.0	88.0	89.0	2.65	0.295	87.00	-1.59	-1.91	
JS	91.0	89.0	98.0	4.73	0.532	92.67	-0.61	-0.92	
JY	92.0	101.0	91.0	5.51	0.591	94.67	-0.26	-0.58	
K	96.0	102.0	103.0	3.79	0.413	100.33	0.72	0.40	
KF									•
KL	99.0	102.0	100.0	1.53	0.177	100.33	0.72	0.40	
KM	82.0	84.0	80.0	2.00	0.236	82.00	-2.45	-2.77	
KX	18.0	17.0	17.0	0.58	0.059	17.33	-13.66	-13.97	×
L	85.0	85.0	84.0	0.58	0.059	84.67	-1.99	-2.31	
LA									•
LE	99.0	79.0	75.0	12.86	1.795	84.33	-2.05	-2.37	
LF	98.0	98.0	96.0	1.15	0.118	97.33	0.20	-0.12	
LM									•

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Barium-133

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
LR	97.0	81.0	85.0	8.33	0.945	87.67	-1.47	-1.79	
LT	105.0	106.0	105.0	0.58	0.059	105.33	1.59	1.27	
M	92.0	90.0	90.0	1.15	0.118	90.67	-0.95	-1.27	
MA	97.0	98.0	96.0	1.00	0.118	97.00	0.14	-0.17	
ME	91.0	96.0	95.0	2.65	0.295	94.00	-0.38	-0.69	
ML	169.0	142.0	158.0	13.58	2.133	156.33	10.42	10.10	×
MN									•
MP	94.0	92.0	96.0	2.00	0.236	94.00	-0.38	-0.69	
MQ	100.0	97.0	99.0	1.53	0.177	98.67	0.43	0.12	
MS	99.0	101.0	98.0	1.53	0.177	99.33	0.55	0.23	
MT	99.0	99.0	98.0	0.58	0.059	98.67	0.43	0.12	
MV	99.0	98.0	94.0	2.65	0.295	97.00	0.14	-0.17	
MY									•
N	93.0	93.0	93.0	0.00	0.000	93.00	-0.55	-0.87	
NB	175.0	172.0	175.0	1.73	0.177	174.00	13.48	13.16	×
NH	120.0	122.0	130.0	5.29	0.591	124.00	4.82	4.50	×
NI	95.0	76.0	77.0	10.69	1.233	82.67	-2.34	-2.66	
NJ	91.0	87.0	96.0	4.51	0.532	91.33	-0.84	-1.15	
NK	91.0	79.0	79.0	6.93	0.709	83.00	-2.28	-2.60	
NP	91.0	98.0	103.0	6.03	0.709	97.33	0.20	-0.12	
NZ									•
O	97.0	98.0	98.0	0.58	0.059	97.67	0.26	-0.06	
OA	96.0	96.0	98.0	1.15	0.118	96.67	0.09	-0.23	
OB	98.0	97.0	98.0	0.58	0.059	97.67	0.26	-0.06	
OK	36.0	41.0	41.0	2.89	0.295	39.33	-9.84	-10.16	×
OL									•
OM									•
OO	91.0	92.0	85.0	3.79	0.413	89.33	-1.18	-1.50	
OT	119.0	105.0	112.0	7.00	0.827	112.00	2.74	2.42	
OZ									•
PB	98.0	97.0	96.0	1.00	0.118	97.00	0.14	-0.17	
PC	105.0	103.0	104.0	1.00	0.118	104.00	1.36	1.04	
PD									•
PE	110.0	113.0	109.0	2.08	0.236	110.67	2.51	2.19	
PM	98.0	93.0	99.0	3.21	0.354	96.67	0.09	-0.23	
PP	75.0	77.0	71.0	3.06	0.354	74.33	-3.78	-4.10	↓
PQ	103.0	103.0	102.0	0.58	0.059	102.67	1.12	0.81	
PV	91.0	92.0	89.0	1.53	0.177	90.67	-0.95	-1.27	
PW									•
PX	100.0	101.0	101.0	0.58	0.059	100.67	0.78	0.46	
PY									•
Q	85.0	89.0	91.0	3.06	0.354	88.33	-1.36	-1.67	
QB	109.0	107.0	109.0	1.15	0.118	108.33	2.11	1.79	
QC									•
QK	84.0	89.0	110.0	13.80	2.020	94.33	-0.32	-0.64	

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Barium-133

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
QL	98.0	105.0	101.0	3.51	0.413	101.33	0.89	0.58	
QM	108.0	113.0	115.0	3.61	0.413	112.00	2.74	2.42	
QP	91.0	89.0	93.0	2.00	0.236	91.00	-0.90	-1.21	
QT	86.0	84.0	83.0	1.53	0.177	84.33	-2.05	-2.37	
QX	81.0	84.0	79.0	2.52	0.295	81.33	-2.57	-2.89	
QZ	100.0	97.0	99.0	1.53	0.177	98.67	0.43	0.12	
R	96.0	95.0	93.0	1.53	0.177	94.67	-0.26	-0.58	
RC	99.0	107.0	111.0	6.11	0.709	105.67	1.64	1.33	
RH	88.0	89.0	88.0	0.58	0.059	88.33	-1.36	-1.67	
RK									•
RN	99.0	100.0	101.0	1.00	0.118	100.00	0.66	0.35	
RO	93.0	100.0	91.0	4.73	0.532	94.67	-0.26	-0.58	
RQ	99.0	99.0	99.0	0.00	0.000	99.00	0.49	0.17	
RR	97.0	97.0	97.0	0.00	0.000	97.00	0.14	-0.17	
RU	88.0	86.0	87.0	1.00	0.118	87.00	-1.59	-1.91	
RV	94.0	94.0	90.0	2.31	0.236	92.67	-0.61	-0.92	
RZ	99.0	100.0	100.0	0.58	0.059	99.67	0.61	0.29	
S	97.0	99.0	99.0	1.15	0.118	98.33	0.37	0.06	
SA	95.0	114.0	86.0	14.29	2.245	98.33	0.37	0.06	
SC	110.0	109.0	111.0	1.00	0.118	110.00	2.39	2.08	
SD	88.0	92.0	94.0	3.06	0.354	91.33	-0.84	-1.15	
SF	14.0	18.0	14.0	2.31	0.236	15.33	-14.00	-14.32	×
SI	94.0	96.0	90.0	3.06	0.354	93.33	-0.49	-0.81	
SK	319.0	295.0	307.0	12.00	1.795	307.00	36.52	36.20	×
SM	89.0	89.0	90.0	0.58	0.059	89.33	-1.18	-1.50	
SN	105.0	101.0	95.0	5.03	0.591	100.33	0.72	0.40	
SR	87.0	95.0	92.0	4.04	0.473	91.33	-0.84	-1.15	
SS	95.0	102.0	98.0	3.51	0.413	98.33	0.37	0.06	
ST	101.0	102.0	100.0	1.00	0.118	101.00	0.84	0.52	
SU	100.0	100.0	101.0	0.58	0.059	100.33	0.72	0.40	
SV	80.0	75.0	80.0	2.89	0.295	78.33	-3.09	-3.41	↓
SW	103.0	103.0	103.0	0.00	0.000	103.00	1.18	0.87	
SY	104.0	101.0	102.0	1.53	0.177	102.33	1.07	0.75	
SZ	117.0	114.0	115.0	1.53	0.177	115.33	3.32	3.00	
T	99.0	100.0	101.0	1.00	0.118	100.00	0.66	0.35	
TA	91.0	89.0	88.0	1.53	0.177	89.33	-1.18	-1.50	
TB	107.0	112.0	105.0	3.61	0.413	108.00	2.05	1.73	
TC									•
TD									•
TE									•
TF									•
TG	104.0	101.0	101.0	1.73	0.177	102.00	1.01	0.69	
TI	100.0	99.0	95.0	2.65	0.295	98.00	0.32	0.00	
TK									•
TL	86.0	93.0	85.0	4.36	0.473	88.00	-1.42	-1.73	

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Barium-133

Lab	Res. 1	Res. 2	Res. 3	Exper. Sigma	Rng anal (R + SR)	Average	Normalized deviation (grand-avg) (known)		Tag
TO	175.0	172.0	182.0	5.13	0.591	176.33	13.88	18.57	x
U	98.0	90.0	88.0	5.29	0.591	92.00	-0.72	-1.04	
W	92.0	90.0	95.0	2.52	0.295	92.33	-0.67	-0.98	
X	90.0	91.0	90.0	0.58	0.059	90.33	-1.01	-1.33	
Y	93.0	95.0	92.0	1.53	0.177	93.33	-0.49	-0.81	
Z	98.0	92.0	89.0	4.58	0.532	93.00	-0.55	-0.87	

Data sorted by Laboratory Average

Average	Tag	Lab	Average	Tag	Lab	Average	Tag	Lab
9.00	x	HP	91.33		SR	95.33		IU
14.33	x	AK	91.33		SD	95.33		BC
15.33	x	SF	91.33		NJ	96.33		CX
17.33	x	KX	91.33		EW	96.33		BL
39.33	x	OK	91.33		CS	96.67		PM
68.33	x	BG	91.67		D	96.67		OA
74.33	↓	PP	91.67		CK	96.67		CO
78.33	↓	SV	92.00		U	96.67		BA
81.33		QX	92.33		W	96.67		AY
82.00		KM	92.67		RV	97.00		RR
82.67		NI	92.67		JS	97.00		PB
83.00		NK	92.67		DD	97.00		MV
84.33		QT	92.67		CA	97.00		MA
84.33		LE	92.67		AF	97.00		FU
84.33		AE	93.00		Z	97.33		NP
84.67		L	93.00		N	97.33		LF
84.67		AJ	93.00		IW	97.67		OB
87.00		RU	93.33		Y	97.67		O
87.00		JR	93.33		SI	97.67		I
87.00		BO	93.33		GI	97.67		HL
87.33		CC	93.33		CJ	97.67		FZ
87.67		LR	93.67		HI	97.67		FE
88.00		TL	94.00		MP	97.67		AU
88.33		RH	94.00		ME	98.00		TI
88.33		Q	94.00		HK	98.33		SS
88.67		BB	94.00		GE	98.33		SA
89.00		DJ	94.00		DL	98.33		S
89.33		TA	94.00		AP	98.33		GL
89.33		SM	94.33		QK	98.33		C
89.33		OO	94.33		BH	98.67		QZ
89.67		AI	94.67		RO	98.67		MT
90.33		X	94.67		R	98.67		MQ
90.67		PV	94.67		JY	98.67		EA
90.67		M	94.67		JE	98.67		AZ
90.67		EB	94.67		DO	99.00		RQ
91.00		QP	94.67		AL	99.00		E

• ≡ No data submitted

TAG SYMBOLS

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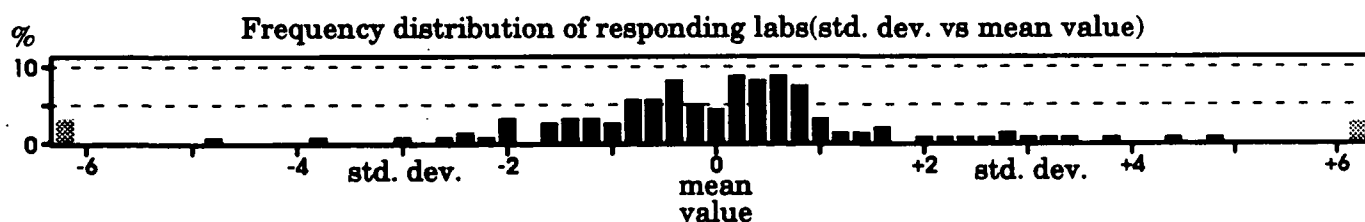
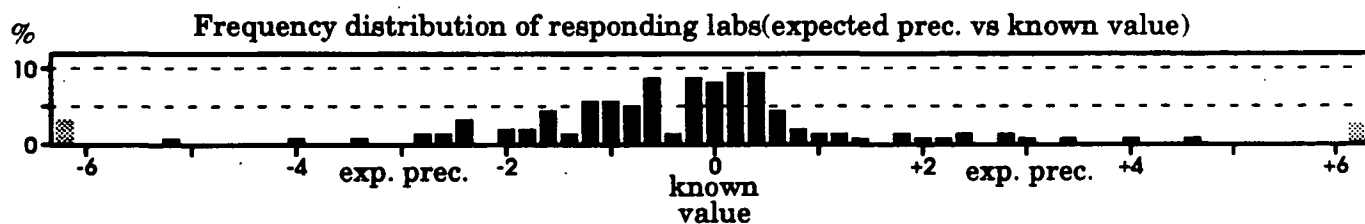
∅ ≡ Insufficient data

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Barium-133**Data sorted by Laboratory Average**

Average	Tag	Lab	Average	Tag	Lab	Average	Tag	Lab
99.33		MS	100.33		AW	105.33		EX
99.33		IC	100.67		PX	105.67		RC
99.33		DH	100.67		FL	108.00		TB
99.67		RZ	100.67		EH	108.33		QB
99.67		HE	100.67		CQ	110.00		SC
99.67		EZ	101.00		ST	110.67		PE
99.67		DT	101.33		QL	112.00		QM
99.67		DM	101.33		CP	112.00		OT
100.00		T	102.00		TG	113.67		IA
100.00		RN	102.00		FJ	114.67		AN
100.00		J	102.00		DG	115.33		SZ
100.00		EL	102.00		BK	118.00	↑	A
100.00		DE	102.33		SY	121.00	×	CE
100.00		BM	102.67		PQ	124.00	×	NH
100.33		SU	103.00		SW	156.33	×	ML
100.33		SN	104.00		PC	174.00	×	NB
100.33		KL	104.00		HJ	176.33	×	TO
100.33		K	105.33		LT	307.00	×	SK



• ≡ No data submitted

∅ ≡ Insufficient data

TAG SYMBOLS

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