

Results of the IRMF Surface Contamination Monitoring Comparison 2005

Sean Collins

Research Scientist

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- IRMF Surface Contamination Comparison 2005
Overview
- Mini 900 monitors
- Results
- Homogeneity of sources

IRMF Surface Contamination Comparison 2005 Overview

- 13 Participants in UK
- 2 surface contamination monitors circulated
 - Mini Instruments EP15
 - Mini Instruments 44B
- Instrument responses calculated
- Details of uncertainties reported
- Success within 30 % deviation from final mean

900 Series Monitor

- Quote from 900 series manual (p12, (j))

“The monitor is not ruggedised and will not work if dropped into a pond or run over by a bus!”

- Semi-logarithmic scale display
- Scaled for 0.5 – 2 k counts s⁻¹
- Available with 6 + probes
- Ratemeter circuit



EP15:

- Halogen quenched G-M tube
- Active area of 15 cm^2
- Window thickness of $1.5 - 2.0 \text{ mg cm}^{-2}$
- Soft beta monitoring
- Can measure alpha particles above 3 MeV



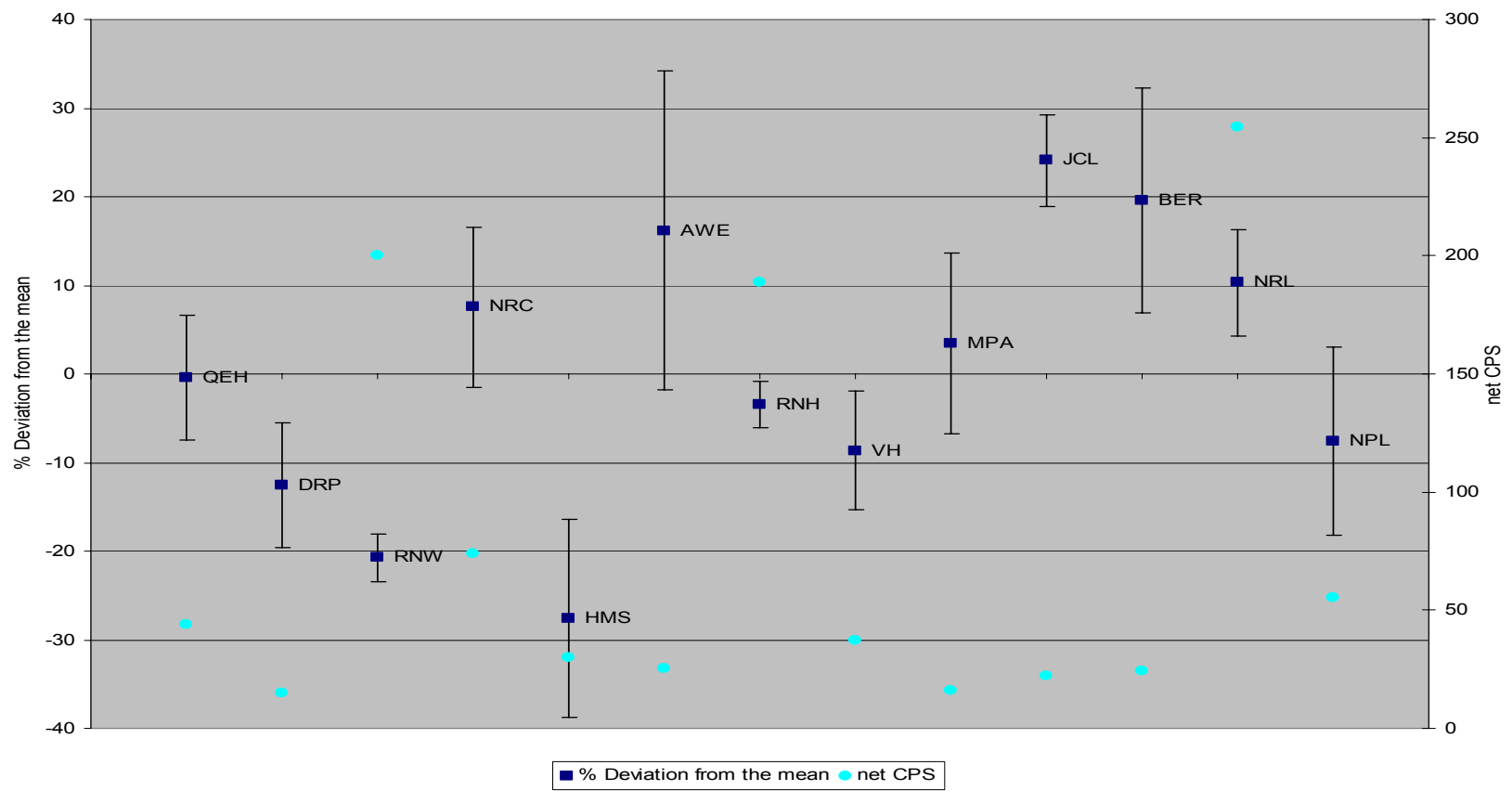
44B Scintillation Probe:

- Beryllium window
- Gammas $> 5 \text{ keV}$
- Betas $> 500 \text{ keV}$

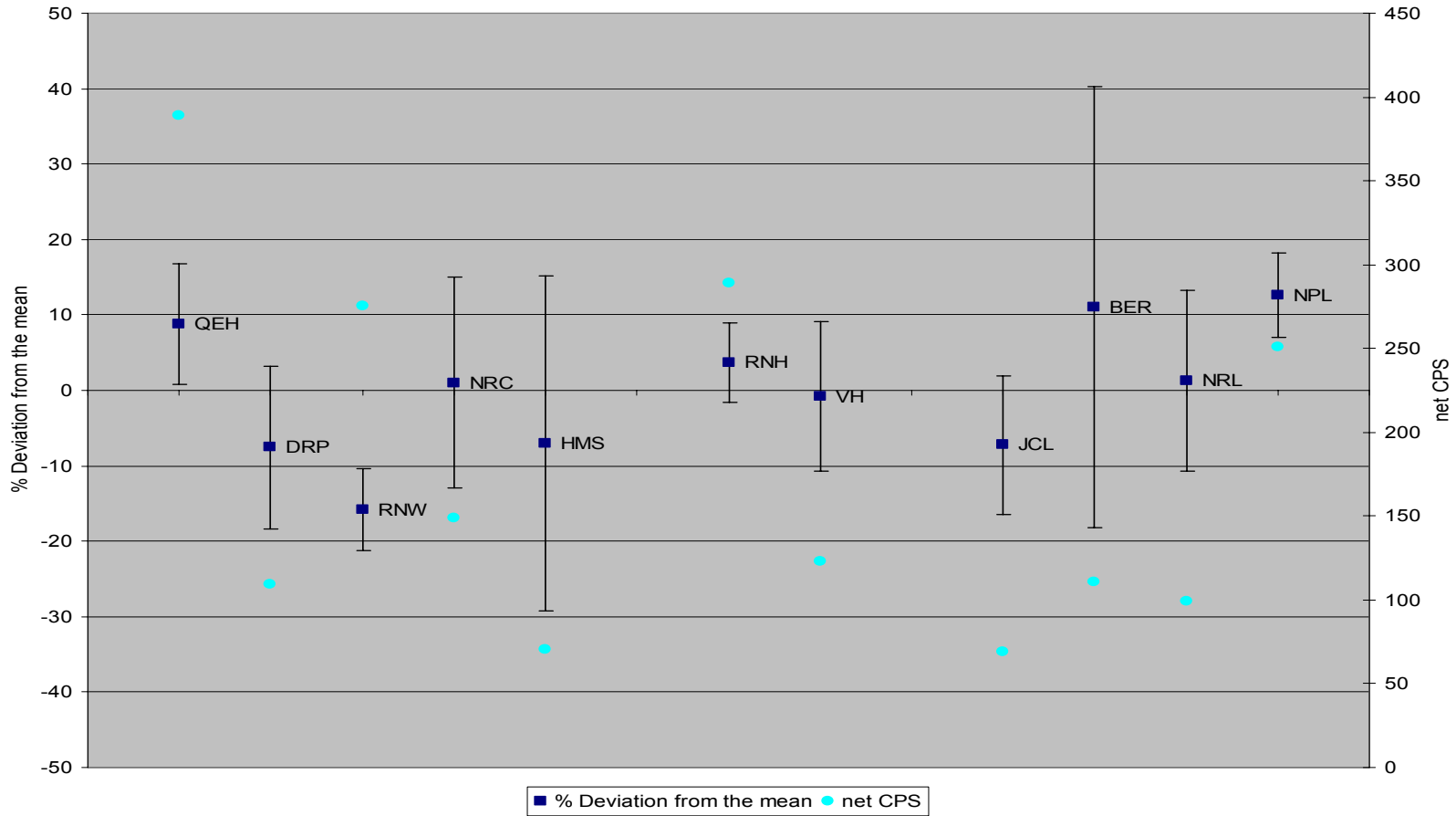
Participants

<u>Organisation</u>	<u>Organisation Code</u>
RRPPS, Queen Elizabeth's Hospital	QEH
DRPS, DERA	DRP
RWE Nukem, Winfrith	RNW
RNW	NRC
HPA*, Chilton	HMS
NRC	AWE
HMS Sultan, NDCF	RNH
HMS	VH
DRaStaC, AWE	MPA
AWE	JCL
RWE Nukem, Harwell	BER
RNH	NRL
RPS, Velindre Hospital	NPL

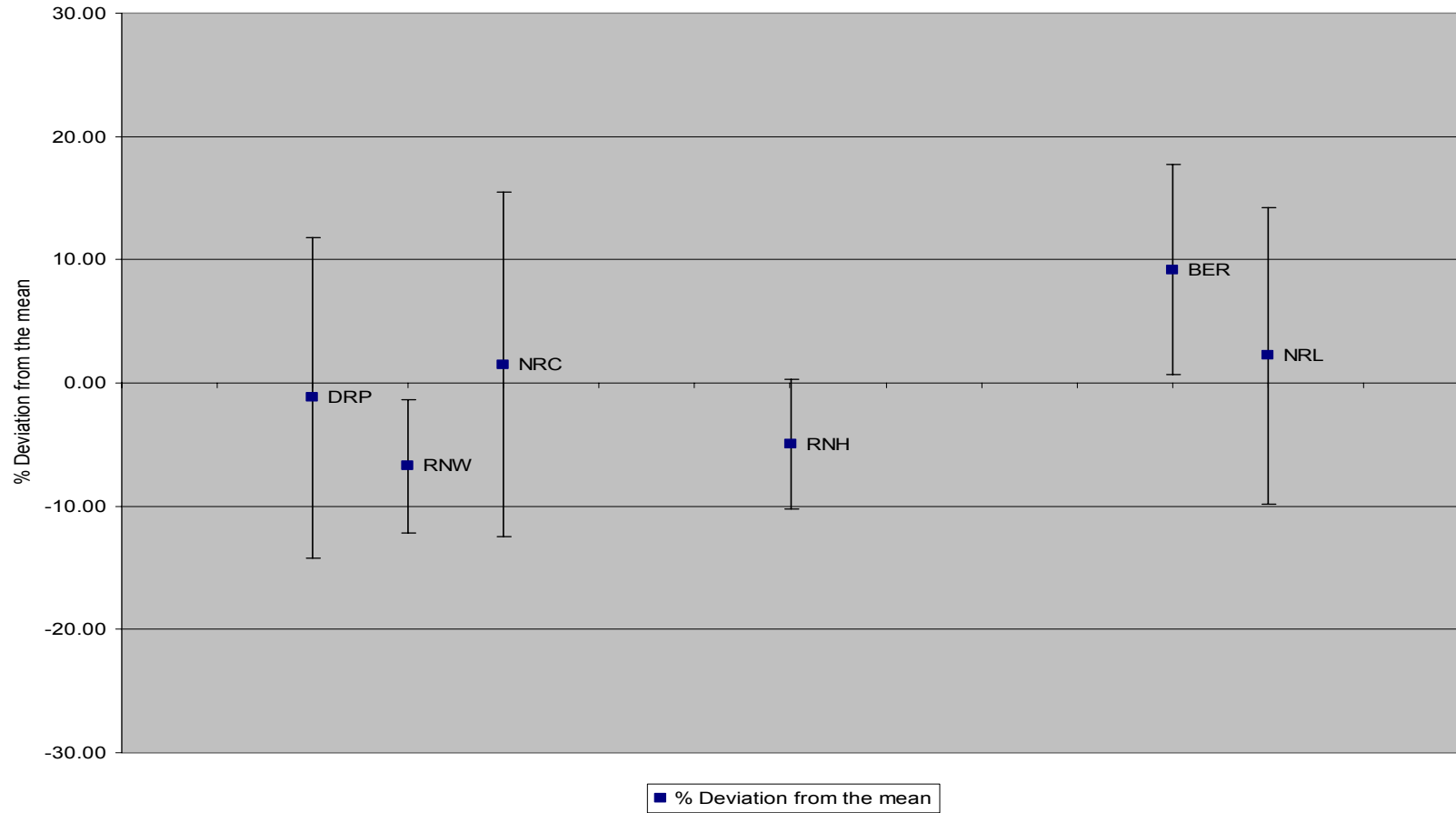
EP15 Results – ¹⁴C



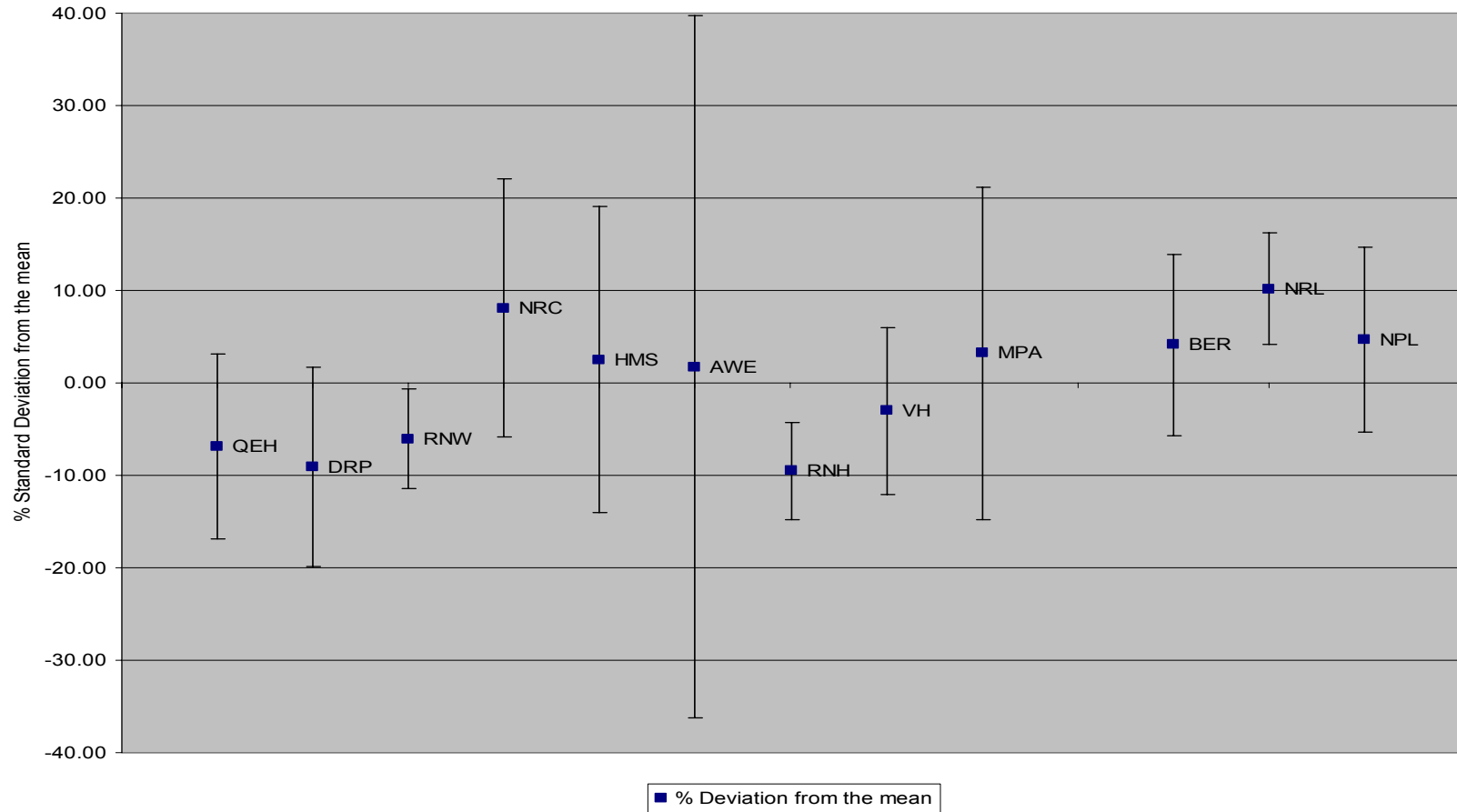
EP15 Results – ³⁶Cl



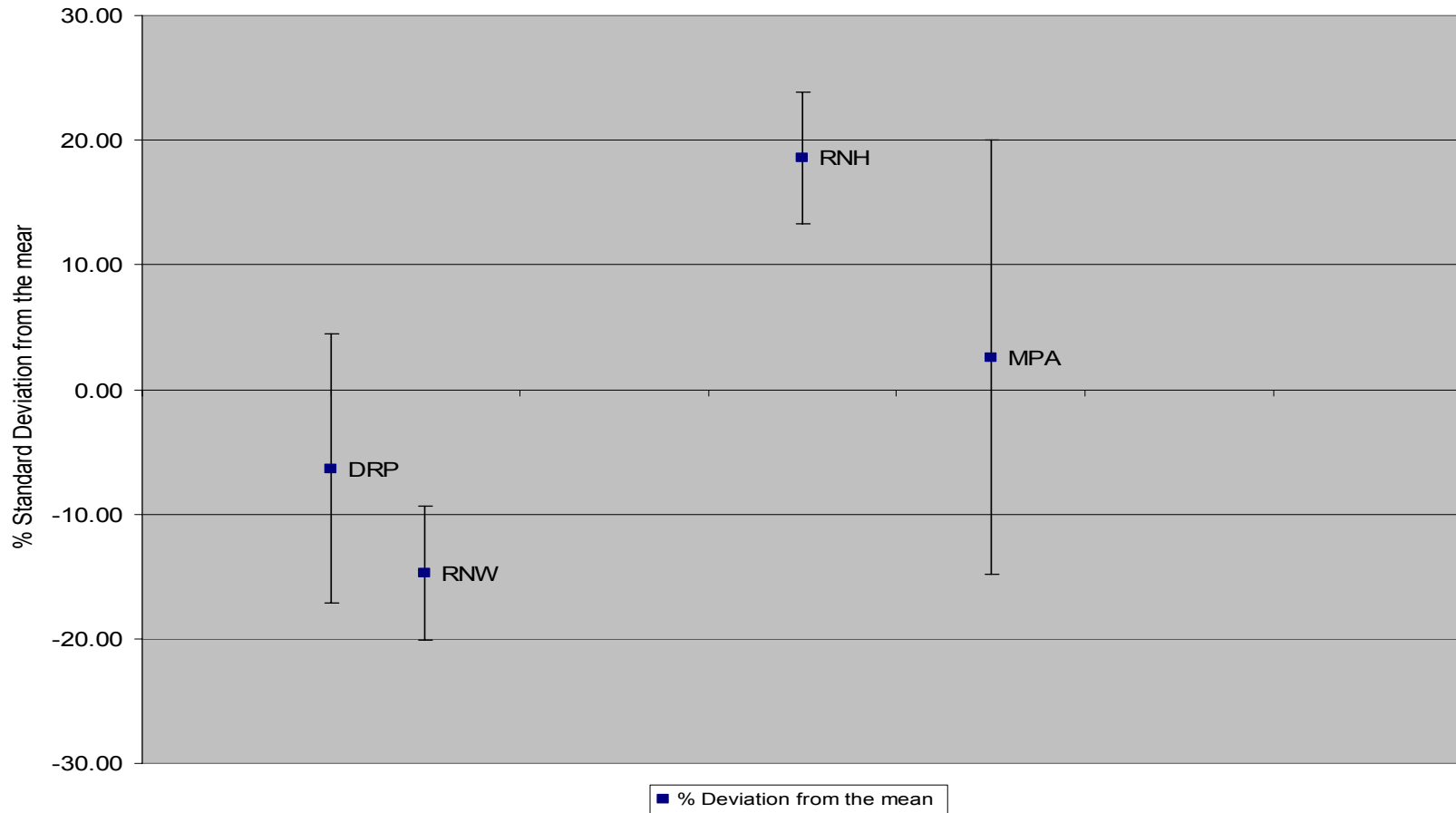
EP15 Results – ^{60}Co



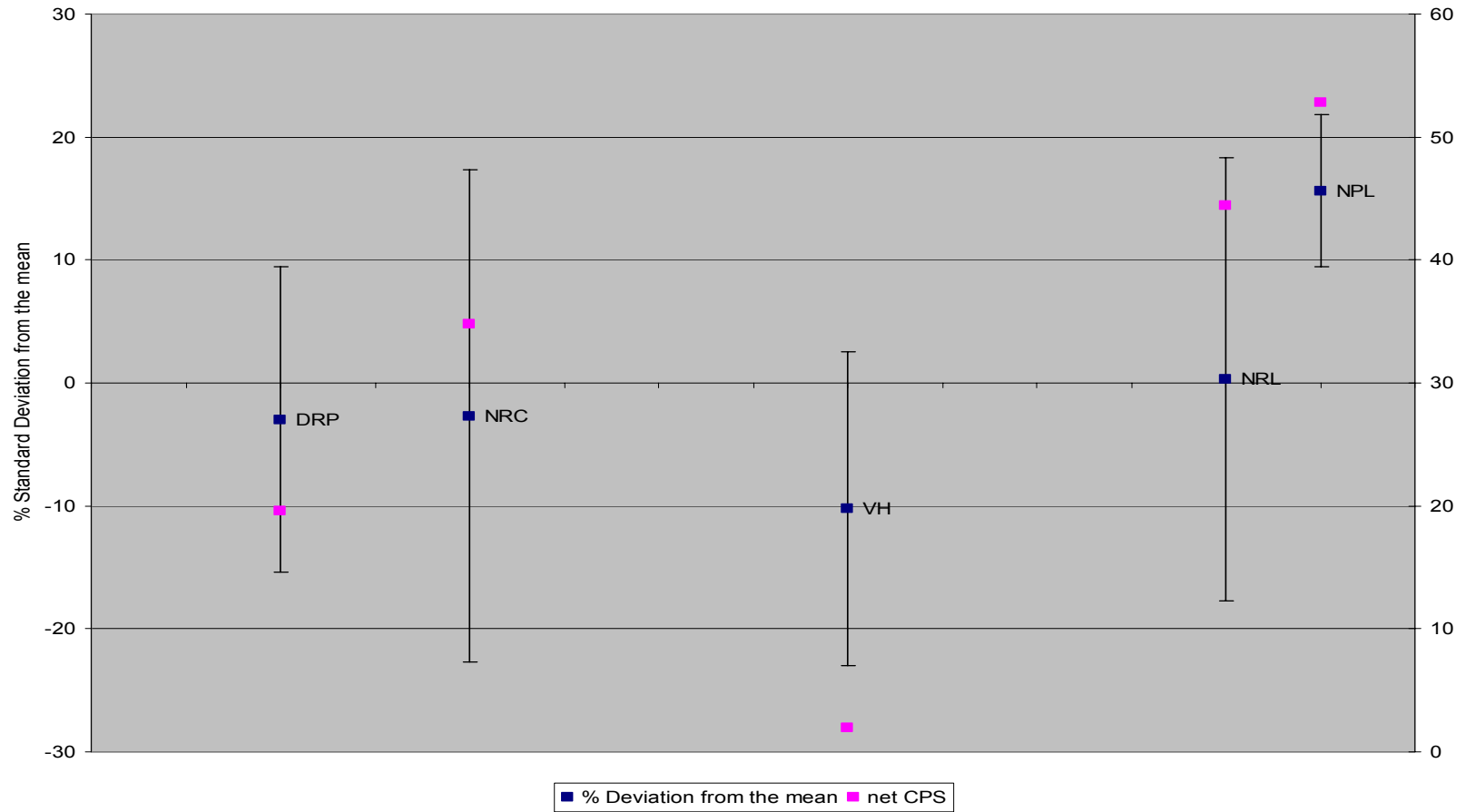
EP15 Results – ⁹⁰Sr



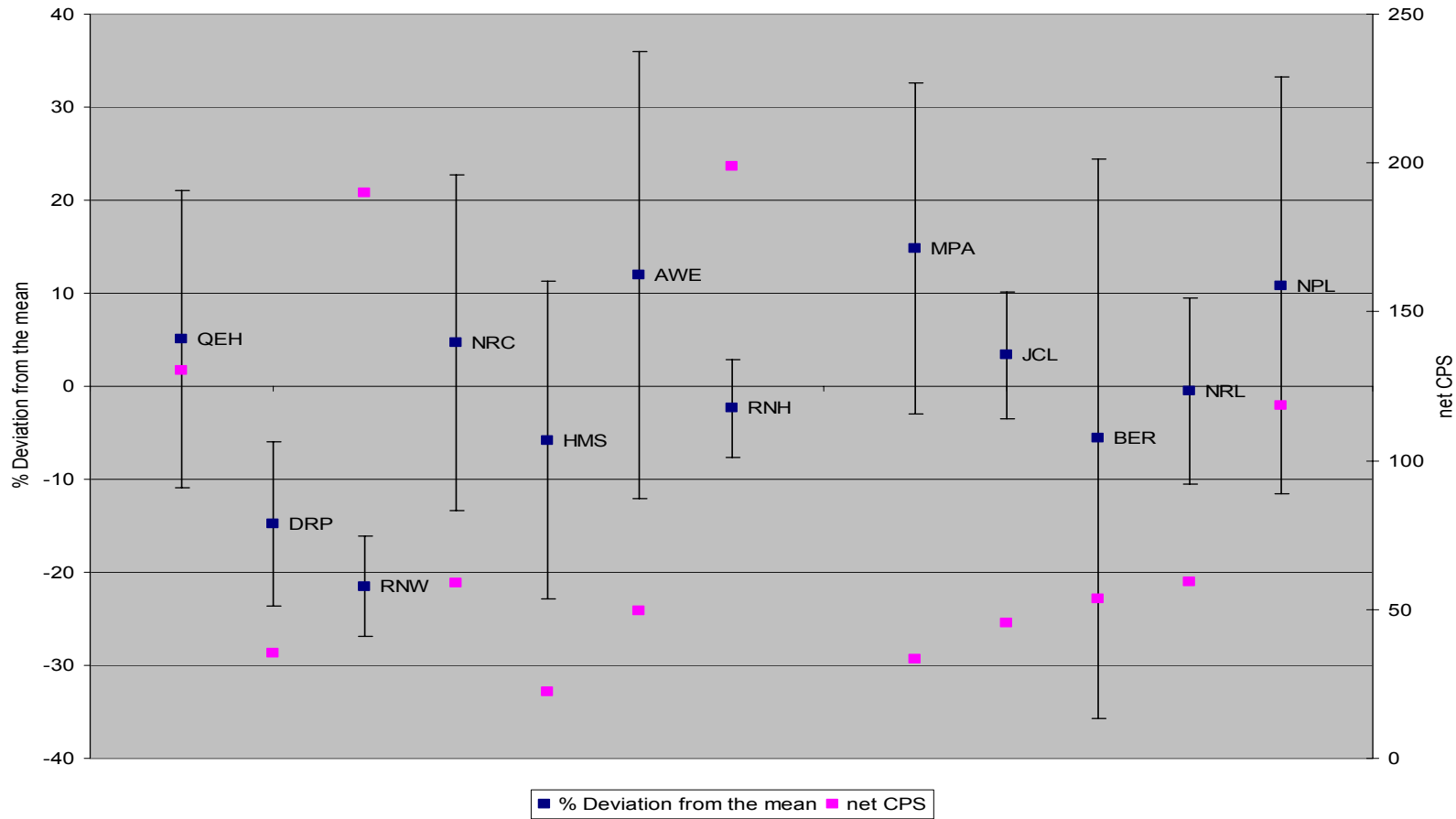
EP15 Results – ^{137}Cs



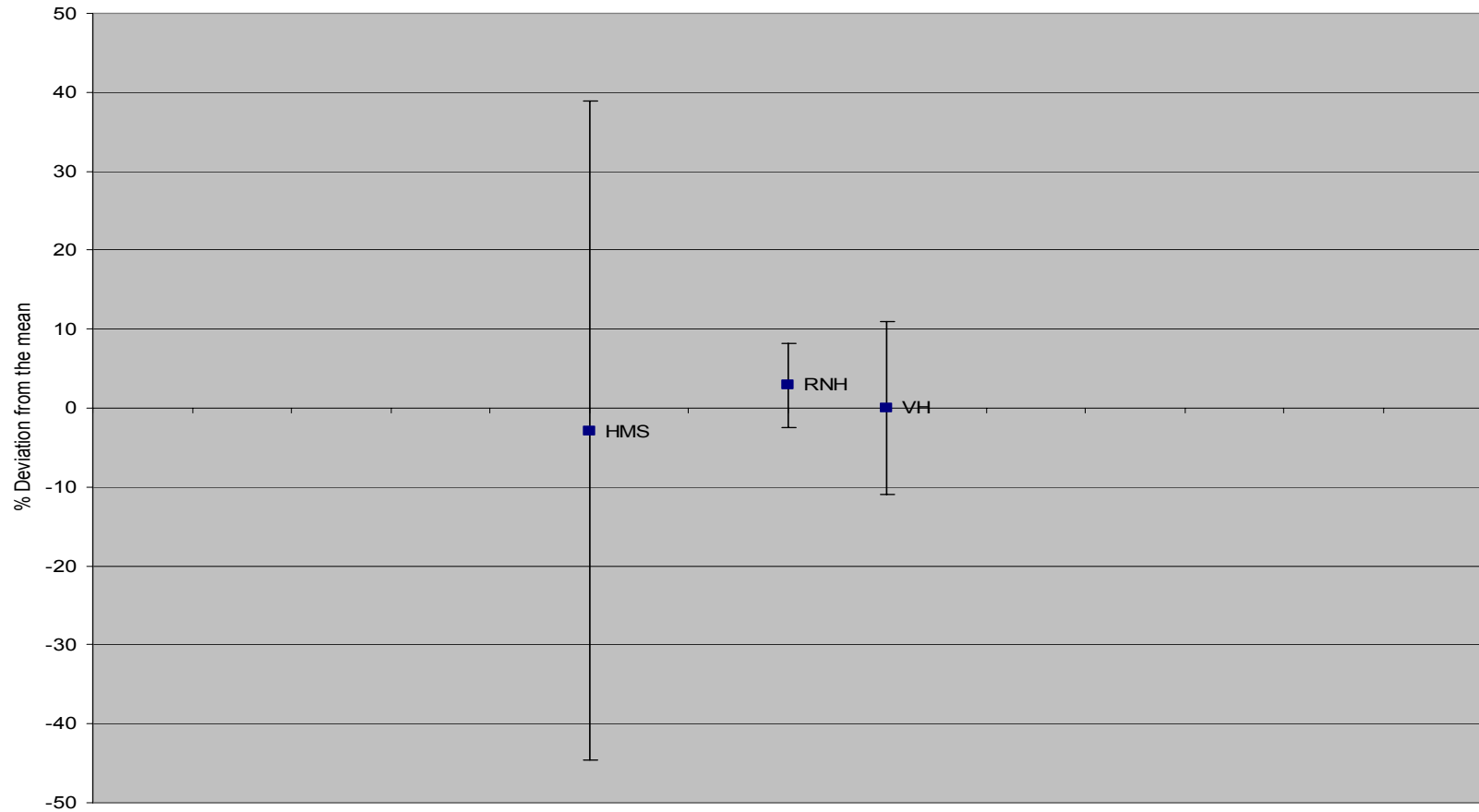
EP15 Results – ^{147}Pm



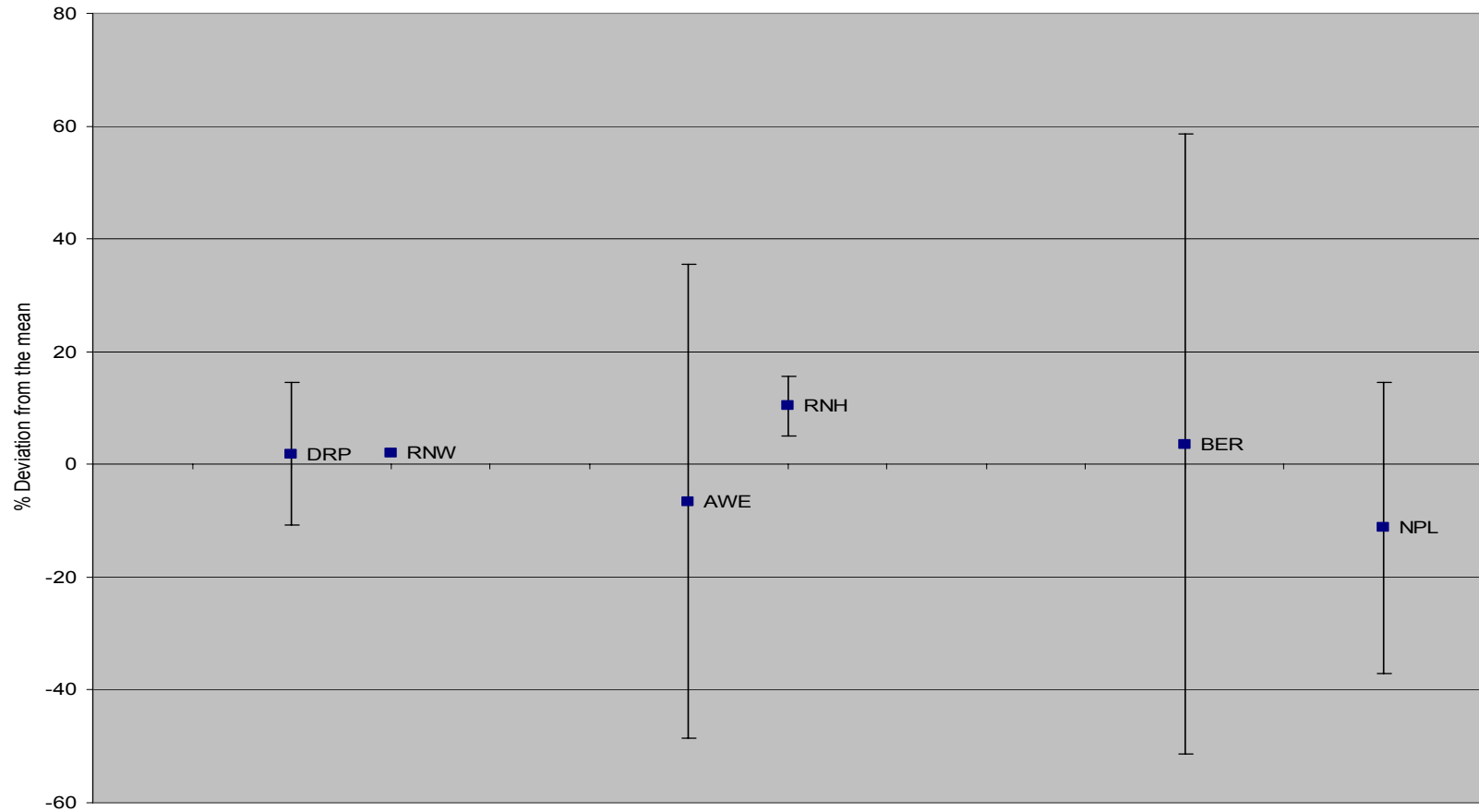
EP15 Results – ²⁴¹Am



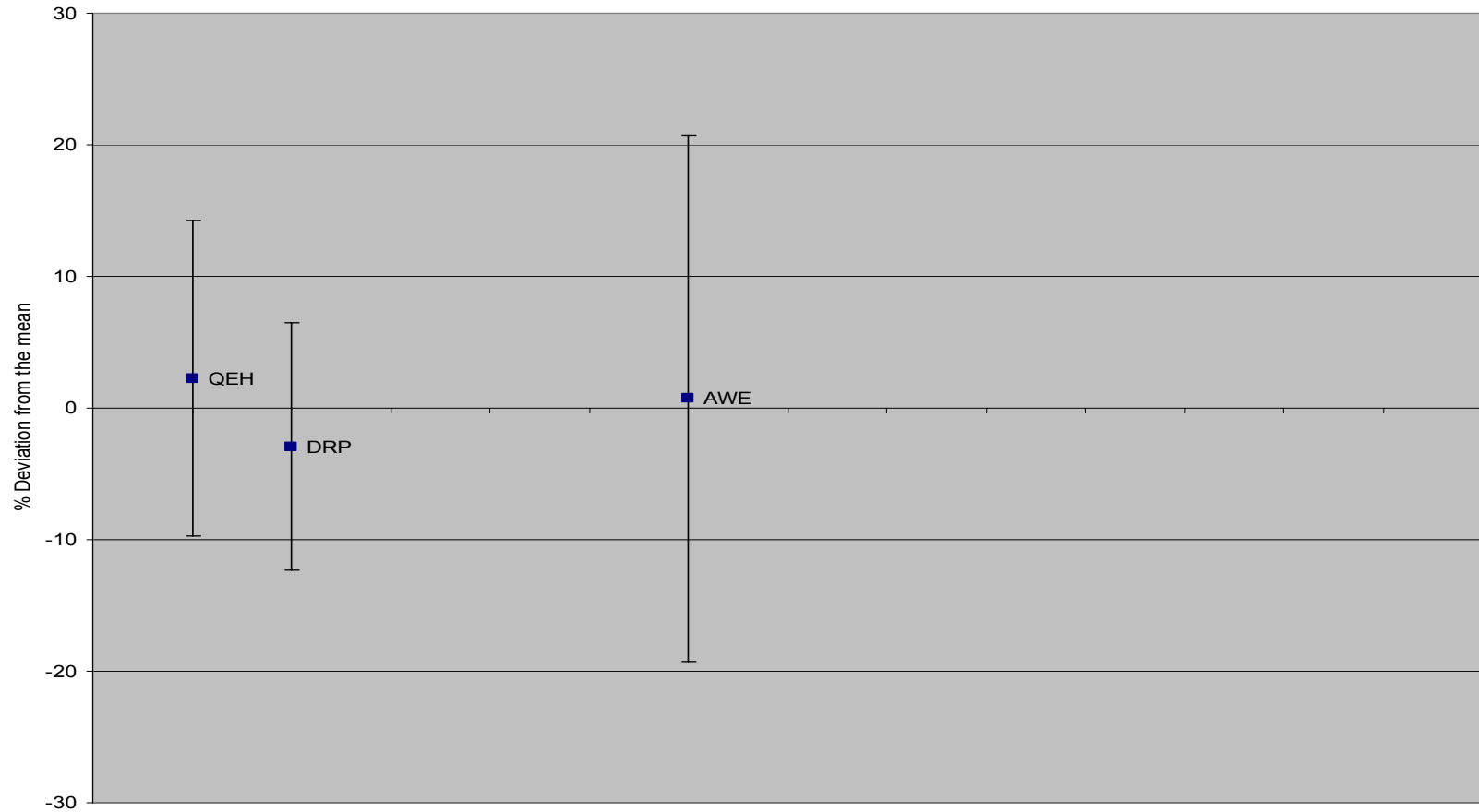
44B Results – ^{36}Cl



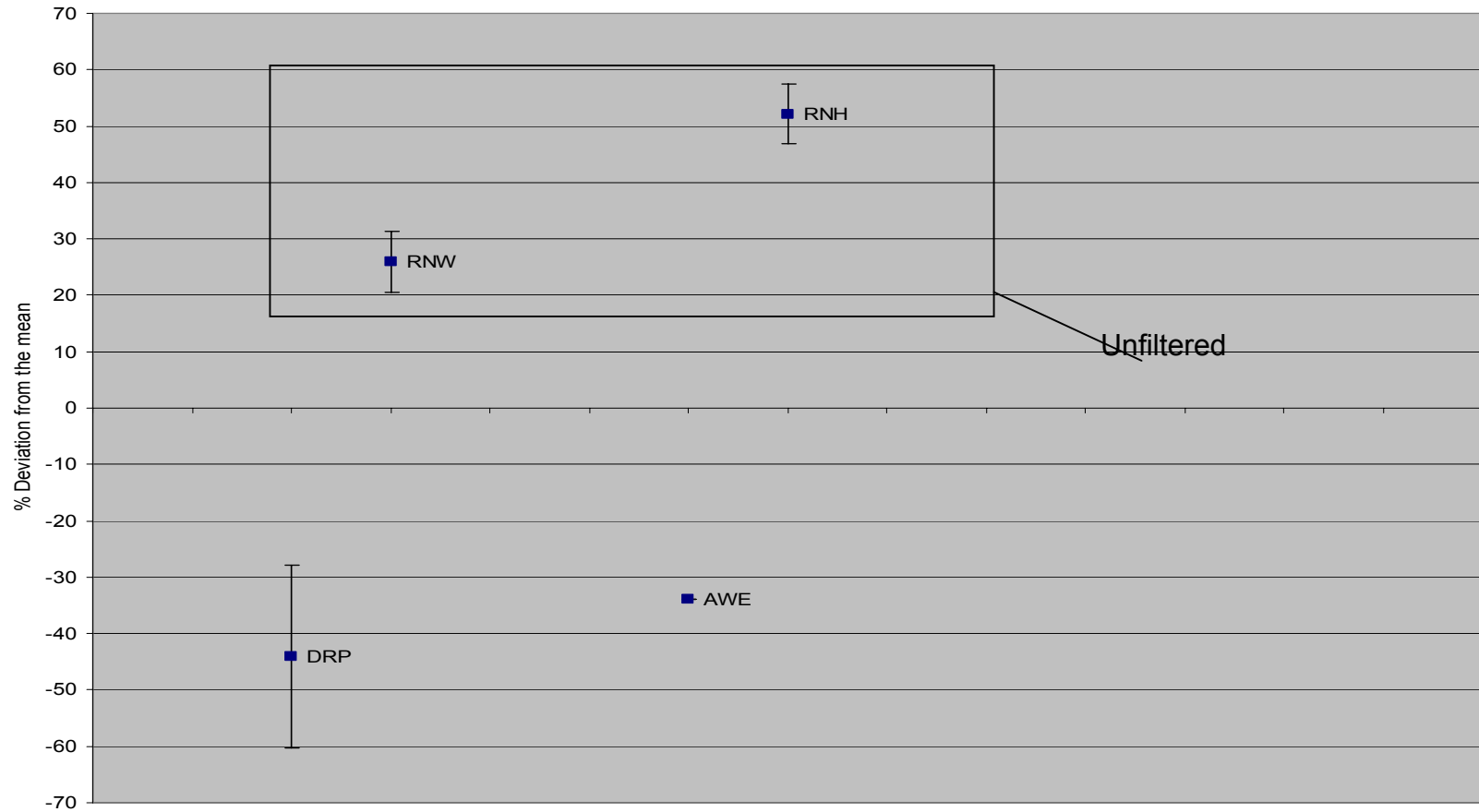
44B Results – ^{55}Fe

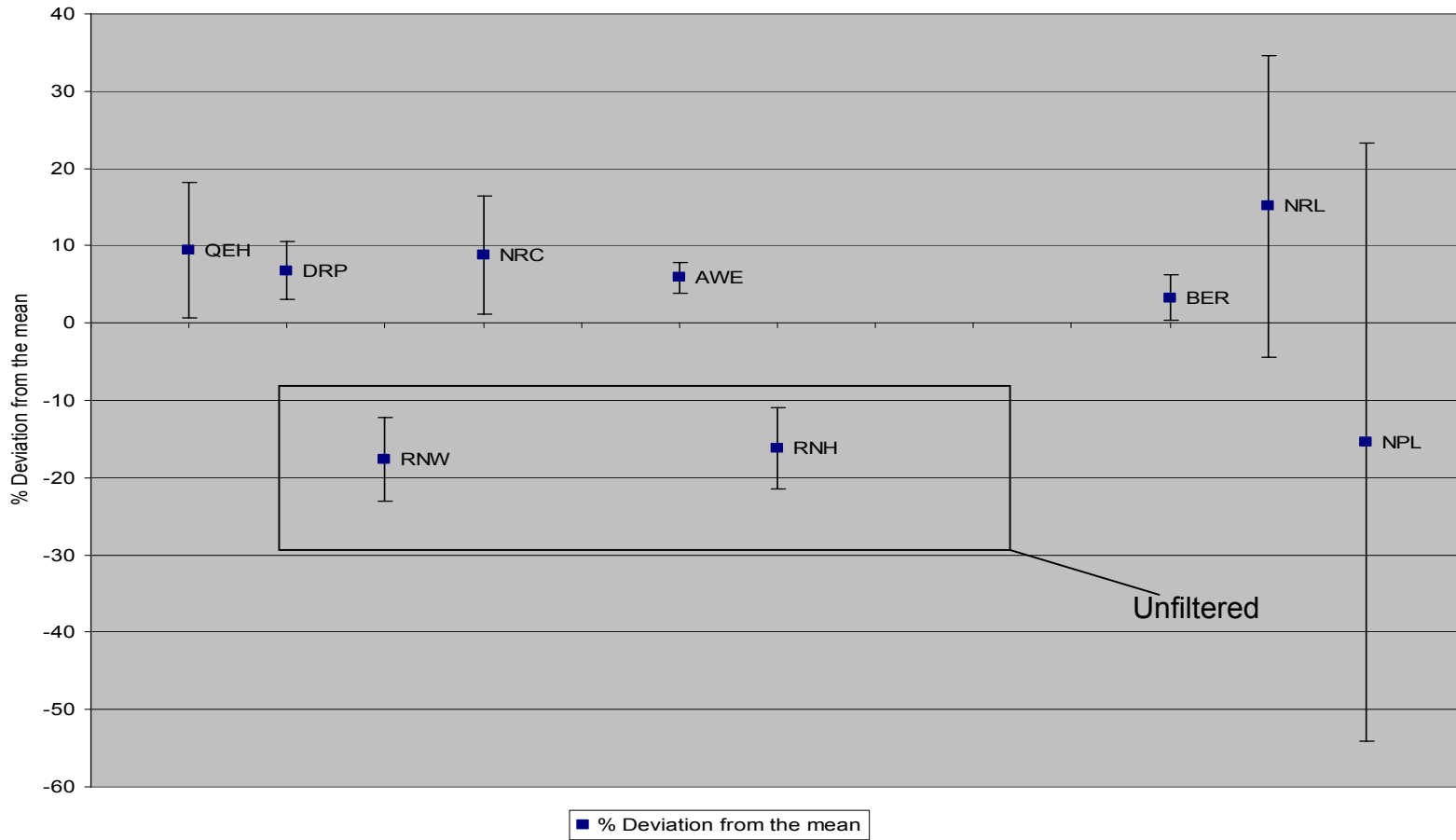


44B Results – ^{57}Co

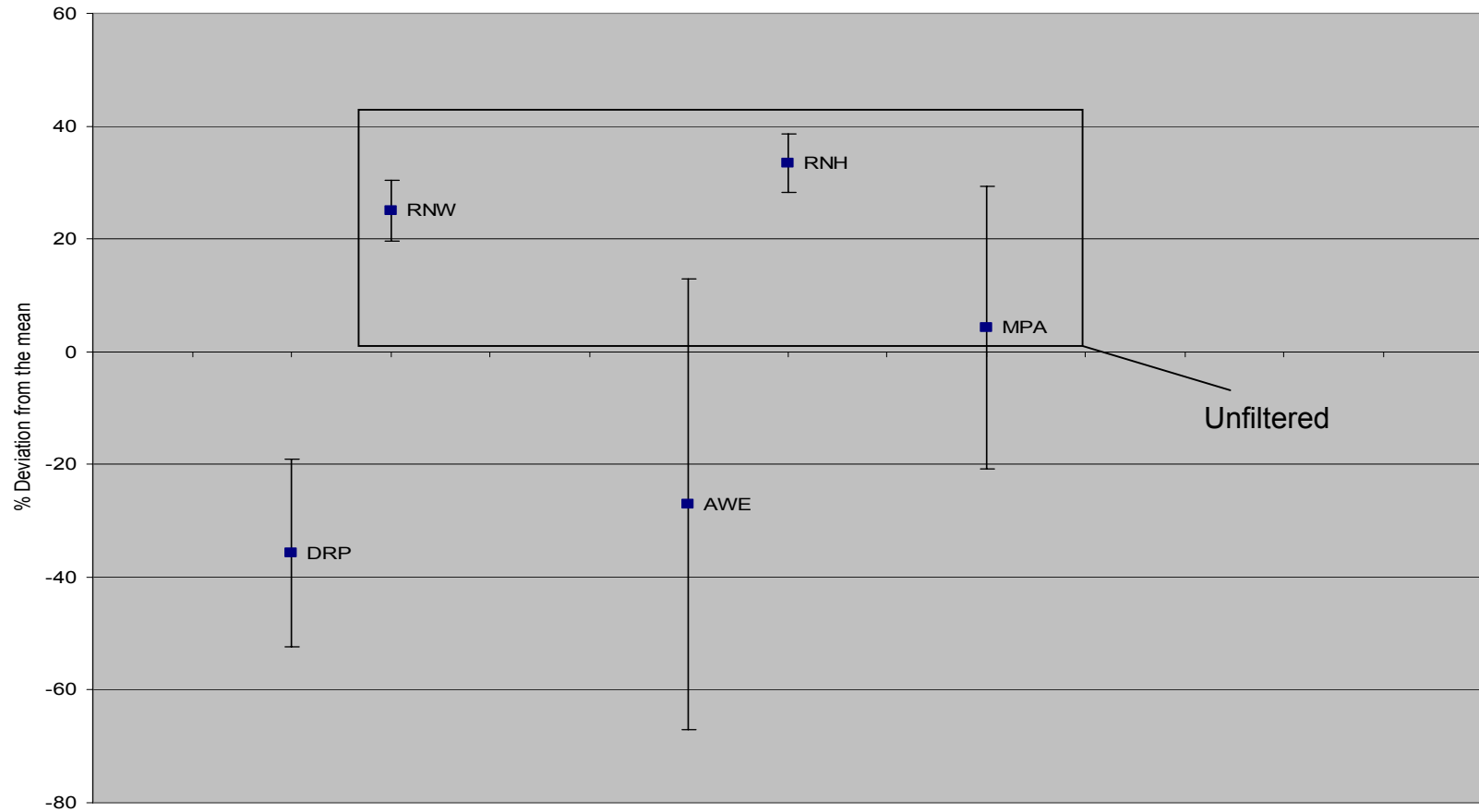


44B Results – ^{60}Co

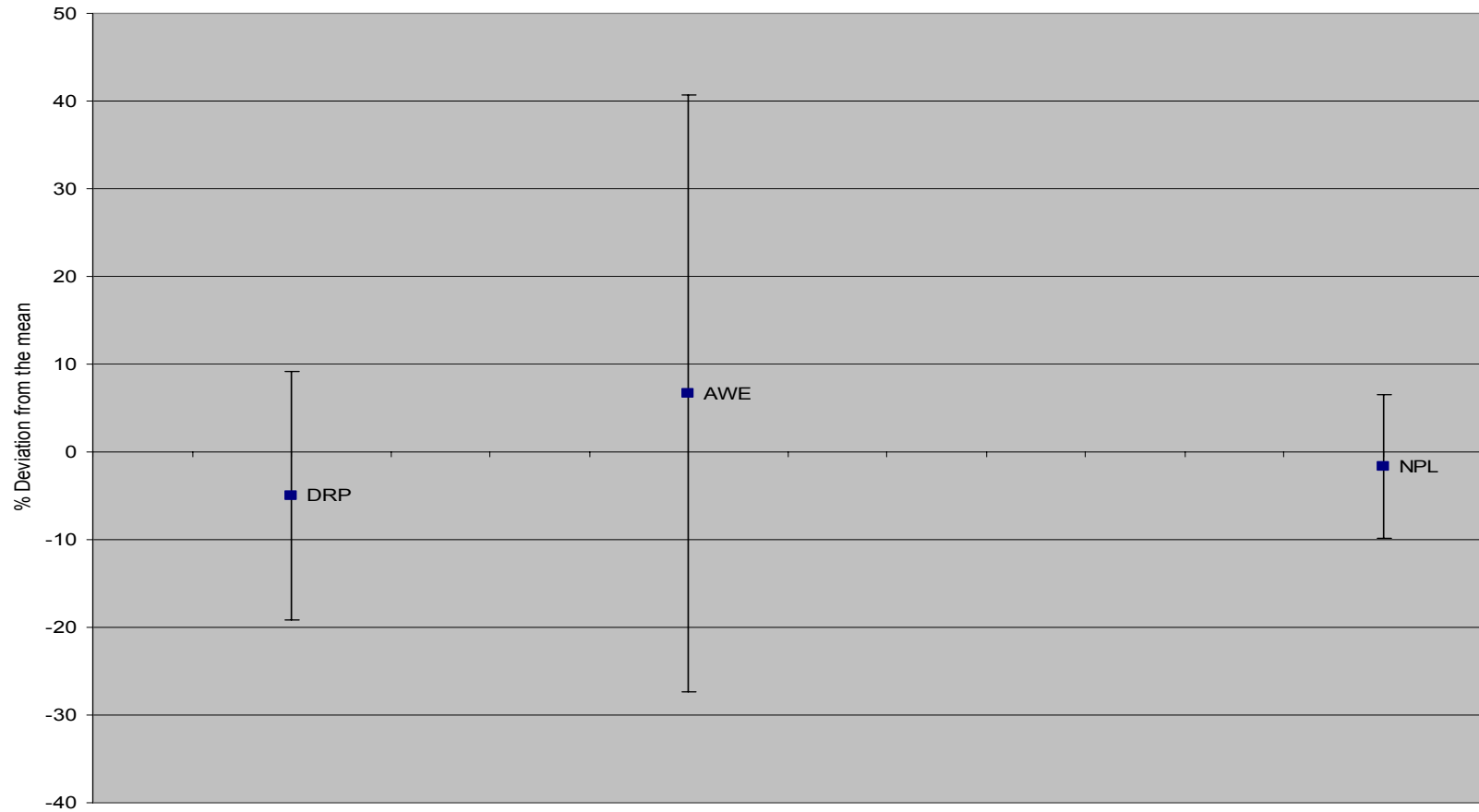




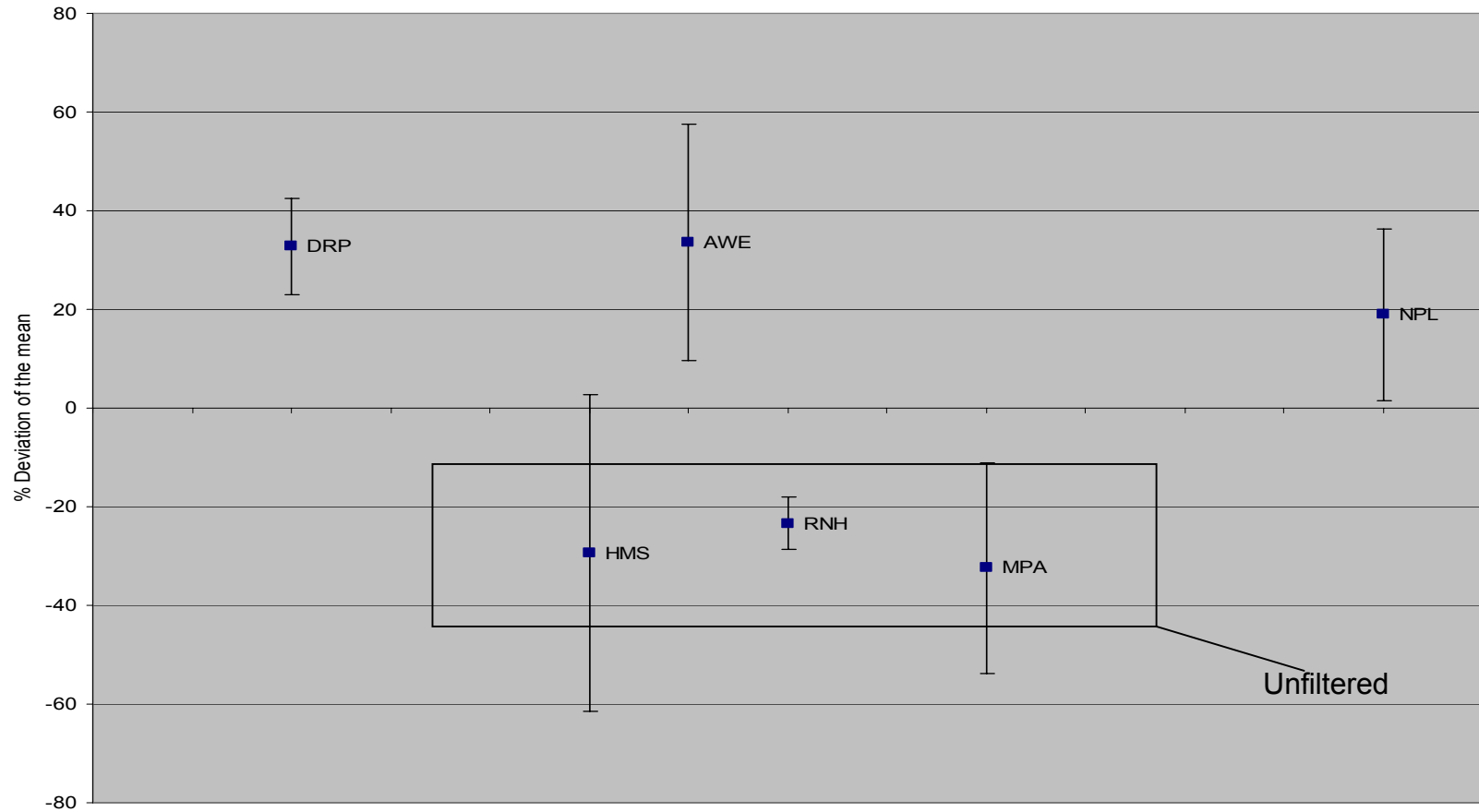
44B Results – ^{137}Cs



44B Results – ^{238}Pu



44B Results – ^{241}Am



Homogeneity of sources

- ISO 8769-2 states homogeneity better than $\pm 10\%$
- Does this always mean the source is ok?

NPL, ^{129}I Photon Reference Source

+ 6.4 %	- 2.3 %	- 2.4 %
+ 5.9 %	- 6.9 %	- 3.6 %
+ 0.2 %	+1.7 %	+ 0.3 %

The 900 Series Manual:

“The monitor is not intrinsically safe and must not be used in a potentially explosive atmospheres”

THE END

QUESTIONS?