

Los Alamos

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memorandum

To: Bruce Erkkila, OS-2, MS E508

Date: June 27, 1989

Thru: M. P. Baker *MBB*

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Hsue
From: S. T. Hsue

Symbol: N-1-89-606

Subject: VERIFICATION MEASUREMENT ON SRP STANDARDS.

We received a set of isotopic standards from SRP. Enclosed is our verification measurement on this set of standards. The verification measurements were performed on June 21-22.

This set of standards was fabricated by MST-10 in 1986 as a part of the standards for SRP. The standards were sent to Mound Laboratories for characterization in terms of heat and plutonium isotopic distribution. Some samples were also sent to BNL for analysis. The summary on this set of standards (chemical analysis by Mound, NBL, and CLS-1) is attached.

The isotopic distribution of the samples was verified with the FRAM system. The reference isotopic distribution and our measured isotopic distribution is shown in Table 1. The reference isotopic values in table 1 are based on the CLS-1 measurement, decay corrected to June 22, 1989. The Pu content was verified with a neutron coincidence counter designed for SRP (FB-line). The counter was calibrated with 10 g standard (A1-86), and 2 g standards (ISOSTD-117, 118, and 151).

Table 1. Verification on isotopic distribution and mass for SRP samples.

Sample ID		Pu-238	Pu-239	Pu-240	Pu-241	Am-241(ppm)	Pu Mass(g)
3%bottom1	Reference	0.0063	96.3179	3.5617	0.0965	321	10.964
	Measured	0.00666	96.367	3.5122	0.09637	315.9	11.074
6%top1	Reference	0.0138	93.5427	6.1282	0.2595	625	8.449
	Measured	0.0152	93.581	6.089	0.25934	629.3	8.464
9%bottom1	Reference	0.0207	92.6604	6.8912	0.3552	749	11.874
	Measured	0.01998	92.5221	7.0313	0.35412	722.8	12.624
12%bottom1	Reference	0.0571	87.0839	11.8231	0.8149	2639	20.223
	Measured	0.0571	86.9825	11.9257	0.8136	2644.9	24.538
15%top1	Reference	0.1656	82.2951	15.4368	1.3906	2835	12.317
	Measured	0.167	81.94132	15.7943	1.38545	27872.3	13.635

The total Pu from our verification measurement is 70g versus reference mass of 63.84g. I am enclosing with this memo a plot of the coincidence rate versus the 240Pu effective. Most of the excess mass arises from the 12% and 15% samples; these two samples also contain relatively high fluoride impurities. We have observed similar behavior for other high fluoride samples in our 10 g standard set and 2 g standard set. The higher real coincidence rate for these two samples, therefore, is consistent with our experience.

I am also enclosing all the raw data of the verification measurement.