



DEFENSE CONTRACT AUDIT AGENCY
DEPARTMENT OF DEFENSE
8725 JOHN J. KINGMAN ROAD, SUITE 2135
FORT BELVOIR, VA 22060-6219

IN REPLY REFER TO

OTS 730.3.B

December 9, 2009
09-OTS-052(R)

MEMORANDUM FOR REGIONAL DIRECTORS, DCAA
DIRECTOR, FIELD DETACHMENT, DCAA
HEADS OF PRINCIPAL STAFF ELEMENTS, HQ, DCAA

SUBJECT: Audit Guidance Memorandum – Calculating Achieved Precision Percentage in
Statistical Sampling for Variables

This memorandum provides guidance on calculating the achieved precision percentage when evaluating the sample results of a statistical sampling application for variables (both Physical Unit and Dollar Unit Sampling). When performing a statistical sampling application for variables, auditors must perform an evaluation of the sample results prior to reporting the projected amount of questioned costs.

In both Physical Unit Sampling and Dollar Unit Sampling, the sample evaluation includes determining if the precision objective established in the sampling plan has been achieved. This requires the auditor to manually calculate the achieved precision percentage at the objective confidence level and compare this to the objective precision percentage (goal) established in the sampling plan. If the achieved precision percentage is calculated incorrectly, the auditor may reach an erroneous conclusion about the accuracy of the point estimate (i.e., conclude the precision goal was achieved when in fact it was not), which could lead to an erroneous projection of sample results.

A revision to the EZ-Quant statistical sampling module to automatically calculate the achieved precision percentage is under construction. Until such time that EZ-Quant provides an automatic calculation, auditors must manually calculate the percentage. Guidance on the correct calculation of achieved precision percentage follows:

Physical Unit Sampling

The comparison of the objective precision percentage to the achieved precision percentage must exclude the high dollar stratum. The achieved precision percentage is calculated by dividing the total achieved precision amount by the point estimate (projected questioned costs) excluding questioned costs for the high dollar stratum. An example of this calculation follows:

**Projection of Stratified Physical Unit Sample Results
Limits Computed at 70 pct. Confidence**

Stratum High \$	Projection Method	Projected Amount (net)	Precision Amount	Lower Limit	Upper Limit
		17,416	0	17,416	17,416
1	Difference Ratio	14,187	4,792	9,394	18,979
		13,132	5,009	8,123	18,142
2	Difference Ratio	20,019	6,386	13,633	26,404
		19,501	6,540	12,960	26,041
3	Difference Ratio	23,244	10,568	12,678	33,810
		24,702	10,346	14,356	35,047
Combined (incl hi\$)	Difference Ratio	74,865	12,985	61,880	87,850
		74,750	12,954	61,796	87,705

Calculation of Achieved Precision Percentage:	
Combined Projected Amount:	74,750
Less Questioned Costs of High Dollar Stratum:	17,416
Projected Amount of Sample Items Only:	57,334
Divided by Combined Precision Amount:	12,954
(Ratio Method Used Because of the Least Precision \$)	
Achieved Precision Percentage:	22.6%

In this example above, the achieved precision percentage at the 70 percent confidence level established in the sampling plan is calculated as 22.6 percent. This achieved precision percentage should then be compared to the objective precision percentage documented in the sampling plan to determine if the sample results may be projected to the universe.

Dollar Unit Sampling

The comparison of the projected precision percentage to the achieved precision percentage must exclude the high dollar stratum. The achieved precision percentage is calculated by dividing the achieved precision amount by the projected questioned amount for only the sampling stratum. An example of this calculation follows:

**Projection of Dollar Unit Sample Results
Limits Computed at 70 pct. Confidence**

	High Dollar Stratum	Sampling Stratum	Combined
Stratum Amount (cum abs val)	113,177	248,089	361,266
Average Questioned Ratio (net)	n/a	0.19	n/a
Projected Questioned Amount (net)	17,416	47,137	64,552
Upper Confidence Limit	17,416	59,026	76,441
Lower Confidence Limit	17,416	36,245	53,660
Precision Range (upper-lower)	0	22,781	22,781
Precision Amount (half of range)	0	11,390	11,390

Calculation of Achieved Precision Percentage:	
Precision Amount (half of range):	11,390
Divided by Projected Questioned Amount (net):	<u>47,137</u>
Achieved Precision Percentage:	24.2%

In this example above, the achieved precision percentage at the 70 percent confidence level established in the sampling plan is calculated as 24.2 percent. This achieved precision percentage should then be compared to the objective precision percentage documented in the sampling plan to determine if the sample results may be projected to the universe.

Field audit office personnel should direct questions regarding this memorandum to their regional offices. Regional Offices should direct their questions to the Technical Audit Services Division, at (703) 767-2238, or email DCAA-OTS@dcaa.mil.

/s/

Karen K. Cash
Assistant Director
Operations

DISTRIBUTION: C