EXPLANATION OF THE STATISTICAL MODEL FOR STANDARD 6

In this part of the self-assessment, the self-assessor or auditor will review a randomly selected sample of establishment files. The review will determine if the establishments were given adequate follow-up for documented violations. Each file will be scored as passing or failing each of four aspects. In order for the program to pass, each aspect must be found passing for at least 80 percent of the establishment files reviewed.

If the inventory of establishment files is less than 800, the self-assessor or auditor must randomly select 40 files at a minimum. If the inventory of establishment files is 800 or more, the self-assessor or auditor must randomly select 5 percent of the inventory (up to a maximum of 70).

At the smallest sample, a 90 percent performing jurisdiction would pass the standard 95.4 percent of the time using 40 files. Using 45 files, the passing rate would increase to 96.4 percent, and using 50 files it raises to 97.2 percent. Raising the minimum number of files from 20 to 40 would increase the workload by 50 percent. It would reduce the risk of failure, however, for a 90 percent performer from 12.4 percent to 7.6 percent, a 41 percent reduction. Considering the consequences of failing, it is possible that some programs with inventories much less than 800 might still wish to expand their sampling to 40 files. For purposes of the self-assessment requirements, 40 is the minimum number of files to be reviewed but a larger minimum is permitted.

The statistical task here was to determine an upper bound on the sample size in order to avoid wasted effort. The proposition that was used to decide the upper bound was to have a high rate of passage for any program that does each aspect correctly 90 percent of the time. A further proposition was that we have a low rate of passage for any program that does each aspect correctly only 70 percent of the time.

Even at the smallest sample of 40 files, a 70 percent performing program would pass the standard only 1.3 percent of the time; at 30 files the passing percent drops to 0.4 percent. Therefore, the low passing rate for 70 percent performers will be met easily by any upper bound.

For inventories of 800 or more, the standard calls for sampling 5 percent of the inventory, up to some limit. The following are the probabilities of passing the Standard for a series of sample sizes, given that the program is a 90 percent performer for each aspect in any particular file review.

Sample	Probability of passing if overall performance is 90%
20	0.876
25	0.903
30	0.924
35	0.941
40	0.954
45	0.964
50	0.972
55	0.978

Sample	Probability of passing if overall performance is 90%
60	0.983
65	0.987
70	0.990
75	0.992
80	0.994
85	0.995
90	0.996

At 70 files, a 90 percent performing program has a 99 percent chance of passing this Standard. Going further buys only tiny increments of improvement. At much higher sample sizes of around 140 files, lower performing programs significantly increase their chances of passing, a change of fortune that favors the very biggest programs. Therefore the upper limit boundary has been set at 70 files for all programs of all sizes.