CA 75-226
EXHIBIT 65 B

DEPARTMENT OF CHEMISTRY

IRVINE, CALIFORNIA 92717

August 19, 1977

Mr. Stephen J. Fallis
Select Committee on Assassinations
U.S. House of Representatives
3342 House Office Building, Annex 2
Washington, D.C. 20515

Dear Mr. Fallis:

As per my August 12 telephone conversation with your Mr. William Triplett, and my telephone conversation with you earlier today, I have summarized below the information requested by the Archives.

1. Method of sampling whole bullets or excessively large bullet fragments. The method of analysis to be used, instrumental neutron activation analysis (INAA), is nondestructive. For bullet lead, the usable sample size can range anywhere from a few milligrams up to a maximum of about 100 milligrams. Thus, any specimens weighing less than 100 milligrams can be analyzed as is, but larger samples - such as whole bullets or very large fragments - need to have a small portion removed for analysis. I usually perform this operation with a tiny clean carbon-steel drill, known as a pin vise, removing only about 15 milligrams of material for analysis. This makes only a tiny hole in the larger sample and does not damage it so far as microscopic comparisons are concerned. If any of the small samples taken originally for INAA by the FBI (in early 1964, at Oak Ridge) are still available, they would be quite suitable for re-analysis, thereby even avoiding the necessity of removing any further samples from the overly-large samples.

2. Method of analysis to be employed. As mentioned above, the method to be used is INAA. Each sample to be analyzed will first be cleaned of any external contamination by rinsing alternately with high-purity acetone and high-purity water. When dry, the sample will be accurately weighed in a small, cleaned, labeled polyethylene vial. Standard samples, containing accurately known amounts of antimony, silver, and copper, will be prepared in similar vials. The first measurements - primarily to measure the silver content of each sample - will also provide fairly

precise results for the antimony and copper contents of each sample. Each sample, and each standard, will be processed identically, one at a time, via my regular procedure: (1) a 40-second irradiation in the pneumatic-tube location of our TRIGA nuclear reactor, at a thermal-neutron flux of 2.5×10^{12} neutrons/cm^2-second, (2) a 40-second decay period, during which the activated sample is transferred to a labeled unirradiated polyethylene vial, (3) a 40-second (clocktime) count on top of our 38 cm^3 lithium-drifted germanium (Ge(Li)) semiconductor detector (with a 1 cm plastic beta absorber between sample vial and detector), coupled to a 4096-channel pulse-height analyzer, (4) storage of the pulse-height spectrum on a fresh magnetic tape, each sample spectrum being identified by its tagword, (5) subsequent printout of the appropriate radioisotope peaks, using our coupled PDP-8/L computer, already programmed for such, and (6) calculation, by standardized methods (including corrections for any analyzer deadtime), of the amount and concentration of each detected element in each sample, and the standard deviation of each quantity (calculated from the counting statistics). The gamma-ray peaks measured for these three elements are, respectively, the 658 keV peak of 24.4-second silver-110, the 498 keV peak of 93-second antimony-124 m_1, and the 1039 keV peak of 5.10-minute copper-66. All peaks present in each spectrum will be identified and measured, in case any other elements are observed. The magnetic tape and each printout will be retained for any possible future reference.

After the pneumatic-tube measurements, probably on the following day, all of the samples and standards will be activated again - this time all at the same time and for a longer period of time (one hour), in the 40-tube rotating specimen rack of the TRIGA reactor, at a thermal-neutron flux of 1.0×10^{12} neutrons/cm^2-second. Each sample and standard, in its labeled cleaned polyethylene vial, will be placed in a different tube of the rotating specimen rack. Commencing about 30 minutes after the end of the irradiation, each activated sample and standard will be counted for 10 minutes livetime on the same Ge(Li) spectrometer mentioned earlier and the spectrum transferred to the magnetic tape. Later, as before, each spectrum will be scanned for peaks, and the peaks of interest will be printed out as before. The antimony content of each sample can now be determined more precisely than before - now via the 564 keV peak of 2.80-day antimony-122. Similarly, the copper content of each sample can now be determined more precisely than before - now via the 511 keV peak of 12.8-hour copper-64. Any small corrections, due to any other contributions to the 511 keV peak besides copper-64, will be made. Any peaks due to elements other than antimony and copper that may show up will be identified and measured. Again, the taped spectra and printouts will be preserved for any possible future reference.

The induced radioactivity level of each activated sample is quite low, and soon declines to a negligible level, so the activated samples can be returned to the Archives quite safely.

Documentation and security. All procedures used, all data obtained, all calculations, and all results will be given in full in a special bound notebook, with each page signed and dated by me. This book, as well as the magnetic tape containing all of the recorded pulse-height spectra, and all of the computer printout sheets, will be retained for any possible future reference. I will also prepare a full written report of the procedures and results for the Select Committee, and for the Archives. The entire operations will be conducted in a confidential manner. During the irradiations and countings, access to the reactor/counting area will be restricted to only the few people who absolutely must be in the area. This includes the Reactor Supervisor, one Senior Reactor Operator, myself, a representative of the Select Committee, and a representative of the Archives. No persons, except the last three, will know the nature of the samples being analyzed. As I have already agreed to, I will not divulge either the nature of the work or the results thereof until the Select Committee has advised me that such has been authorized. Whenever the samples are not in the process of being irradiated or counted, they will be in the custody of the local office of the Archives.

Very truly yours,

Vincent P. Guinn

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VPG/mek