Mr. F. A. Barker
Mr. Jack Clegorn

January 21, 1947

Mr. J. Fred Reeves GENERAL ELECTRIC - PITTSFIELD

In reference to Mr. Wheelock's letter of January 15, attached, I have discussed the Anniston analysis of Aroclors with Mr. Clegorn, Dr. Jenkins and Mr. Barker and I do not believe that Anniston is far off base, if at all, on our Aroclors or their analyses. You will note Mr. Barker's letter, attached, concerning the pour point of our Aroclor 1254. Mr. Barker has checked pour points on the same material by five different people who formerly analyzed Aroclor regularly. These five people independently arrived at a 10°C pour point on the same sample.

Our laboratory, using the ASTM method and ASTM standards, states that individual results on the same oil in any one laboratory may vary by 5°F, which is 2.8°C and that different laboratories may vary by 10°F, which is 5.6°C although the average of three or more results in different laboratories should show the differences between averages no greater than 5°F, which is 2.8°C.

The test that Mr. Barker ran shows a reproductivity of results of plus or minus 0°C and you will note that the tabulation of our pour point with the G.E. pour points varies by only 1.8°F on the average. This is well within the limits allowed by ASTM standards.

The ASTM standard method calls for the use of ice to cool the sample. In the range for Aroclor 1254 the G.E. analytical calls for the use of liquid air or liquid oxygen. It is my belief that the cooling by liquid air is very rapid at the outside of the tube and that the Aroclor can be stiffened before a true and correct temperature is shown on the thermometer near the center of the tube. The use of ice does not allow such rapid chilling and I believe that our thermometer will probably read closer to the true temperature of the Aroclor. In any case, if G.E. uses liquid air and we use ice, this is probably the reason for the difference in pour points. Furthermore, I do not know whether G.E. has tested their method for reproductivity of results as has our laboratory. If they have not I believe that this should be done.

G.E. also states that Anniston resistivities of 300×10^9 is below specification. This is not so as our specification states that resistivities shall be above 100×10^9. I am sure that both G.E. and our Sales Department is aware of this. I am unable to see why there is a difference between the resistivity results of our laboratory and G.E. They state that we may have a dirty cell. It may

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also be that there is a difference in methods or in the machines used for this test. I have been unable to find anything about this.

General Electric has also stated that a value of .125 for chlorides in the corrosion test is above specification. This is not so as our specifications state that .15 is the maximum.

G.E. also states that we invariably get lower viscosity values than they do. Dr. Jenkins states that this matter was discussed at great length some years ago and that it was discovered that due to differences in the quality of vicosimeter or to the differences in methods it was impossible to check on this determination. I do not know the whole story but Dr. Jenkins has it in his files and has promised to send it to me. However, it seems that G.E, is aware that they normally get approximately 1.5 seconds higher and I do not understand why G.E. now complains about a difference.

I note that on the third and last page in the table of defects that the refractive index is above specification for two lots. The specifications for refractive index for Pyranol 1467 are 1.6137 to 1.6147. I do not understand why these lots are high.

G.E. evidently is worried about a discrepancy in analytical results rather than about any defective or off grade Aroclor or they would be complaining about the quality of the material rather than about analytical results. With the exception of the refractive index of 1467 and possibly the resistivity of 1254, I see no serious error on the part of the Anniston plant or laboratory and it is quite likely that a careful check of resistivity will reveal a condition similar to the pour point and viscosity determination where the differences can easily be explained.

R. P. Leeven

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