DIELECTRIC FLUIDS PRIORITIES

IN ORDER OF IMPORTANCE

JULY 22, 1969

Item 1. Safe Disposal of Contaminated Aroclor

a) Satisfactory disposal of over 600,000 pounds of scrap Aroclor 1242 from General Electric is being moved in bulk to a New Jersey land fill at a cost of 1.3 cents a pound. Disposal at sea would cost 1.76 cents a pound and be less desirable.

b) Drum shipment of reclaimable Aroclor to Findett is too costly. Reclaimable material sent to Findett should be in bulk.

c) Incineration is under study. It will be more costly than disposal in a nearby land fill.

Item 2. Polypropylene Film, Europe and Japan

General Electric has at least four approaches of ties for making and marketing PPL film in Europe. We await return of Luke Hart, their General Manager, who is now exploring these in Europe. We also await further discussion between Kalle and Don Cameron.

Mike Scovill of General Electric likes the tie, G.E. - Monsanto-Kalle as the strongest technical tie.

Mr. Hart will also explore a G.E. - British Cellophane-Monsanto tie and also G.E. tie with a paper company such as Bollore.

Mr Scovill is actively interested in PPL film in Japan and possible joint venture with Monsanto.

Item 3. Arc-Formed Gas from Aroclor 1242 and Aroclor 1242-Rich Blends

Laboratory tests demonstrated flammability or explosive range limits of the arc-formed gases from Aroclor 1242 not found in the case of the formerly used more highly chlorinated dielectrics.

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As Aroclor 1242 is in large scale commercial use, the required redefinition of these askarels is under way.

Also, underway are prototype tests at Westinghouse and General Electric. Results will be basis for final judgement about continued use of Aroclor 1242 in transformers.

Item 4. Possible Replacements of Aroclor 1242 in Transformers

a) Westinghouse would use a blend of 70 percent Aroclor 1254 and 30 percent TCB.

b) General Electric, Rome, Georgia would probably use the above or a blend of 80 percent Aroclor 1248 and 20 percent TTCB.

Item 5. Second Source of Chlorobenzenes

Hooker, who have not been dependable, remain the sole U.S.A. source of chlorobenzenes (TCB and TTCB) for dielectric fluid blends.

As the foregoing blends all reflect use of chlorobenzenes, dependence on Hooker continues subject to strong limitation. Either we need an independent external source, or Monsanto needs to produce these chlorobenzenes -- at least in event of another emergency.

Item 6. New Low-Temperature Capacitor Blend

A blend of 75 percent Aroclor 1242 and 25 percent TCB has been selected for low-temperature capacitors to be made in Canada. Two truckloads have been supplied and the potential is 0.5 million pounds.

Item 7. Inverters for Canadian EHV Lines

The same above low-temperature blend is likely to be used in large volume for cooling inverters (essentially transformers) to invert AC to DC to AC on the EHV system from Labrador to New York. Each inverter would need 500 gallons of fluid.

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Item 8. Purification of Epoxide Additives

To date Monsanto attempts to purify PPO by earth treatment has failed. Attempt to purify Unox 206 by distillation gave questionable improvement. Our MCS 748-Unox 206 concentrate was found unstable, as was also Prodelec's Superad.

Plessey Ducon claim our MCS 748 is not good, but Superad is satisfactory and Carbide's Unox 206 is not satisfactory.

Item 9. Additives for Aroclor 1242 to Improve Wetting PPL Film

This is aimed at eliminating the paper from the power capacitors employing polypropylene film-paper and Aroclor 1242. It is also aimed at improving Aroclor to stave off the above mentioned possible replacement with silicate esters or silicone oil.

Item 10. Silicate Ester MCS 962 Dielectrics for Polypropylene Film Capacitors

Looking ahead five years, DuPont and a number of capacitor makers foresee the use of silicate esters or silicone oil dielectrics for plastic film capacitors for ballast and motor-run capacitors that now use paper and Aroclor.

Monsanto needs to determine what silicate esters we can make and at what cost to compete effectively against silicone oil, some of which may be available at $12.50 a gallon in large volume.

At this time we offer MCS 962 silicate ester for capacitors at $15.00 a gallon. This is as direct replacement for silicone oil in specialty capacitors, a small volume market.

Item 11. Bromo-Chloro Biphenyl

Possibility of making this type material at nominal increased cost should be explored regards the merit of such compounds and their possible biological degradability.

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Item 12. Exploration of Market for Films of Barium Titanate Deposited on Aluminum Foil

Central Research at Dayton is in process of plasma deposition of barium titanate on aluminum capacitor foil. The product will be tested by our Research and by Maxwell Laboratories.

Item 13. New High Temperature Insulation for Askarel Transformers

High voltage equipment has been installed in Research, but materials testing has not begun. Unless 100 percent Aroclor can be used and the lower boiling chlorobenzene can be eliminated there is not much point in looking for higher temperature insulation.

Item 14. New Ventures and Enterprises

We foresee no significant sales volume nor profits from making and selling the laboratory apparatus for power factor analysis, nor from the Porocel column and the In-Line cell.

P. G. Benignus

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