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BICC Central Research & Engineering Division

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Mr. P.G. Benignus,
Market Manager,
Dielectric Fluids,
Monsanto Industrial Chemicals Co.,
800 N. Lindbergh Boulevard,
St. Louis,
Missouri 63166,
U.S.A.

4th July, 1974.

Dear Paul,

I am most grateful to you for the enclosures with your letter of June 11th, 1974 and particularly the specifications for your various alkyl benzene fluids. Perhaps I could comment successively about the major lettered paragraphs in your letter:-

A. I am sorry that the activities in Sao Paulo fell through, but it is not critical for us to acquire further information as Pirelli virtually have a sole monopoly for the sale of self-contained oil-filled cables in South America.

B. I am most grateful to you for the specifications for alkyl benzenes. I would like to use one or two of these as study documents in the forthcoming CIGRE Working Group on "Dielectric Liquids". May I use these provided I make it clear that they are standard Monsanto specifications, or would you prefer me to avoid employing them or merely use them and obscure the Monsanto identification at the top? I imagine that the figures given are fairly standard for alkylates of the same molecular weights from many different sources and they would merely act as examples of the range of properties for each particular class of liquid. There is no difficulty in providing DDB and related fluids with adequate resistance to oxidation and, in fact, Pirelli claim that after proper purification and earth treatment DDB and DNB show superior resistance to oxidation compared with the best mineral cable oils.

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C. I am interested in the information given by Dr. Munch. I have been in possession of the details of Sun and Mobilec oils for the electrical industry for some time, as I am able to obtain this data direct from the General Cable Corporation.

D. The reaction and policy of Con Edison is very interesting, although I am sorry that you did not get their request in time to react fruitfully. If you should ever wish to pursue this subject further, BICC would be able to supply you (for a modest consideration!) with all the details for the on-site treatment of cable oils (drying and de-gassing) to enable you to overcome the problem mentioned in the first paragraph at the top of page 2 of your letter.

E. Thank you for the data from Doble Engineering. We have had similar information from them in the past but it is particularly useful to have the comparison test data on your Alkylate MCS 1112 against mineral oil and a blend.

With regard to the rest of your letter, I can only refer you to the original Pirelli IEEE paper, which was published in 1963 and was a contribution to a Conference held at White Sulphur Springs. They gave a complete range of test details, including those on a full-scale self-contained oil-filled cable impregnated with DDB in comparison with a similar design impregnated with standard European mineral oil. The performance of the DDB sample of cable was much superior under thermal and electrical overload and the difference in properties of the two liquids were described in the paper in great detail. I therefore feel that there is no real problem in controlling acidity and power factor during oxidation tests on a DDB sample, provided the latter is appropriately refined, dried and purified before use. There is no scarcity of this data for cable oils derived from mineral sources and these are certainly much more stringent (as opposed to your implied deduction) than is oil for transformers. A cable engineer would be unable to use standard transformer oil in oil-filled cable, though I must admit that it would be the higher viscosity which would present the principal limiting property rather than their relative resistances to oxidation.

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I am fairly certain that there will be a progressive trend towards the use of alkyl benzenes as impregnants for paper based high voltage power cables, either alone or in combination with selected petroleum oil fractions and, in fact, our Central Electricity Generating Board have already approved the use of DDB as an alternative to our standard cable oil so that we are able to choose the liquid to suit the particular application. On the whole we can obtain suitable mineral oil of lower viscosity and, hence, these are preferred for routes where there are serious departures from level runs. This materially reduces the hydraulic problems and the number of stop joints which have to be installed.

I shall shortly be sending you the agenda and papers for the SC. 15/WG-02 meeting in Paris, although I shall feel very sad that you do not plan to join us.

I have certainly passed on your greetings to my wife and young Richard; both of them well remember the entertaining dinner we had with you and your young English colleague in the local Village restaurant.

Looking forward to meeting you again before long,

Yours sincerely,

E.H. Reynolds/EB

E.H. Reynolds
General Manager

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