Monsanto

FROM (NAME & LOCATION): Wilson W. Overall - St. Louis

DATE: June 5, 1969

cc: W. R. Richard-WRICH
P. D. Benignus
J. G. Bryant

SUBJECT: ASKAREL-FILLED ELECTRICAL CABLES

REFERENCE:

TO: Richard Davis

On June 3, 1969, I had a phone conversation with Bob Pollardy of Union Electric Company, here in St. Louis. Bob is the Chief Cable Engineer at Union Electric.

Bob stated that he had not heard of any applications where askarel-filled cables had been used. He thought the reasons were:

1) compatibility with other materials in the system;
2) toxicity problems;
3) high cost (most important).

He quoted a price differential of 30¢/gallon for mineral oil to $1.60/gallon for askarel.

Most of the oil-filled cable applications at Union Electric are what they term as sub-transmission or network circuits, usually 138 KV or below.

Bob stated that at one time, UE used askarel transformers throughout their entire system. However, after an analysis of their system and their safety record, they felt that it was not necessary to continue to pay the premium for the askarel. Therefore, they changed over to oil where they could. Askarel is used in areas where required by building codes or where Union Electric thinks it would be a hazard even though it isn't required. In their own sub-stations, they are using mineral oil.

Bob said that he has seen several askarel transformers blow up and as expected, warm or hot oil would be the only problem whereas with the oil-filled transformer depending upon the temperature prior to explosion or rupture, the oil would come out in flame. However, by controlling the conditions in which these transformers are located, the safety hazard was considerably reduced. The control conditions are sprinkler systems, fire-proof doors, sumps to catch the oil, etc.

MONS 096381

An interesting sidelight; when filling the underground cables with the mineral oil, they use a degassing procedure prior to putting the oil in the pipe. Bob said that this was done by pulling a vacuum on the oil and then allowing the air to escape. As far as equipment is concerned, he stated that they were using some very old equipment and they now have very little use of this equipment because of their low rate of installation of underground cable.

Bob said that present day building codes normally allow flammable materials to be used under controlled conditions. This is the area in which an oil-filled cable would be classified. Therefore, there is no pressure being put on by the municipalities and government bodies that control the building codes to use askarel.

Bob Pollardy sees no advantage in paying more money for askarel for cables and in his tenure of twenty years of working with cables, he has seen relatively few fires caused by flammable mineral oil. He stated that these cables are all underground; therefore, very inaccessible as far as external sources starting a fire. Most of the breakdowns are electrical shorts because of a breakdown in the dielectric strength of the fluid.

Bob had heard of Pirelli in Europe and knew that he was working on some new types of cable systems. However, he said European and American cable engineering methods were quite divergent.

I would be interested in knowing more about Pirelli's work in Europe. My conclusions to date are that in this country there is no market at the present time for an askarel-filled cable; however, in Europe there may be one because of different governmental regulations, population distributions, local building codes, etc.

I would appreciate any information available from Monsanto Europe concerning this, and I would be glad to forward any information that you think would be useful to them.

Wilson W. Overall

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