FILE NAME: Borg Warner (BW)

DATE: мфто CŜō нн

DOC#: BWлом

DOCUMENT DESCRIPTION: [ŜűűŜNJ ű2 . ² ₹NJ2Y ¢ĸŜ aŜI·Ř /2NJLJ

February 22, 1973

Same as call Report last revised in letter form.

Mr. Warren McColl
Borg-Warner Corporation
Spring Division
700 South 25th Avenue
Bellwood, Illinois 60104

Dear Warren:

As per your request, contained herein are my notes taken during our recent meeting in Chicago on February 8, 1973. Please review them and critique the areas of concern accordingly. As you will note, the target values for up-grading the present grade lines are not listed. We'll include them as soon as they become available.

The areas discussed included the performance of present friction papers, those presently being developed, and those which are to be considered for future application. To best report upon these areas, I have selected to list them in separate paragraphs labelled, "Specific Commentary" subtitled accordingly.

Specific Commentary:

1. German Friction Paper (6)

A special friction paper made in Germany was exhibited for quick visual analysis. It represented a competitors attempt to replace some of our 650D. A quick observation indicated that it was probably a 100 per cent cotton sheet containing Fe_2O_3 according to the color. We are capable of making this inclusion, if necessary. In fact, we have several pilot grades at the present time which appear to be similar. Evidently this paper does not present a significant threat since the aforementioned grade is a superior performer.

2. Friction Paper for Hydramatic - Asbestos free (3)

Hydramatic is most concerned with OSHA requirements and restrictions. As a result we have been requested to do the following:

a. Supply Borg-Warner with an up-to-date report letter containing our short and long term (1976) position involving asbestos contamination.

b. Asbestos-Free Friction Paper

As a result of Hydramatic's pollution concern, they have been selected by Borg-Warner as the customer which will test our new asbestos-free clutch plates. Mr. Bob Hornick, Original Equipment Sales Manager, will be the contact man between Hydramatic and Borg-Warner. A special program will be outlined using LPM-51-72 as a prototype because past results indicated this sheet to be the most promising.

3. Friction Paper for the Japanese Market

Most of the tests conducted upon the P-105-H paper aimed at the Japanese Market have been completed. Borg-Warner reported that they were pleased. Although some material break-out is still evidenced, the improvement has been significant. Clutch plates produced from P-105-F and P-105-G have not been tested. These are papers produced to further increase the durability of the original P-105 series. In the interim, Borg-Warner will supply plates made from P-105-E.

4. Standard 650N

It was reported that this grade has been vastly improved and represents the paper that they were accustomed to testing in the past. Manufacturing produced a consistent run and according to the last meeting with Manufacturing personnel, Warren McColl recommended that the densometer average should be 30-32 and should not stray erratically from the 25-40 range.

5. High Temperature Resistant Paper

a. P-220, a 220 pound all crocidolite fiber paper, was investigated as a possible heavy duty, high temperature clutch plate material by Wayne Behr. With the use of a Dow Corning product, a silane, plus the addition of a high temperature resin, and our effort to keep our binder level low, Wayne hopes to eliminate the squawk experienced after 300 cycles. Also, he believes that a plate could be developed from this base sheet that would not easily be destroyed permanently. We will produce a 13 inch wide coil during our next Ahlstrom run and send it to Wayne for evaluation.

b. In order to investigate the ability to improve upon Z-directional tensile strength we will produce three separate pilot machine runs altering the binder only. We feel that a greater Z-directional and shear strength can be achieved if most of the latex is removed or replaced with PVA and saturated with ultimately hard resins.

6. Up-grade Existing Grades

Some of the previous activities already mentioned herein will ultimately lead us to the up-grading request of existing grades. Most of the improvements will be investigated from a mechanical strength aspect as well as the ability to meet the desired frictional properties. The latter characteristics have not as yet been defined but specific numbers are presently being formulated and will be sent to us shortly. It has been intimated that a 10 to 15 per cent improvement will be the requested target.

7. Graphite Replacement

We have successfully found a replacement for graphite according to results achieved on one pilot machine grade manufactured several months ago. We have been requested to attempt a replacement in the "F" furnish at 235 pounds and a 30 mil. minimum caliper in order to investigate the possibility of replacing graphite in an entire grade line, if necessary.

In conclusion both Bob Cobsolini and I want to thank you for the hospitality granted us during our visit.

Best regards.

Very truly yours,

THE MEAD CORPORATION

Chester J. Lobos, Group Leader
Specialty Materials
Product Engineering Department
Technical Papers Division

CJL:sb

cc: Mr. J. M. Nolan
Mr. D. B. Wilkinson

Note to J.M.N. and D.B.W. - Warren wanted a copy of our report of the afforementioned meeting . . . . I simply used my trip report exercising the necessary deletions.