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May 27, 1980

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Subject: Asbestos-Free Lining Development Program

Cnassis Engineering, Brake Department, has initiated a program to evaluate asbestos-free brake lining materials. The objective of this program is to develop asbestos-free disc and drum lining materials that have the performance characteristics of present asbestos-containing organic and semi-metallic materials, and meet the requirements of toxic substance regulation.

Attachment I outlines a recommended lining evaluation program. The currently released lining materials will be used as baselines for relative performance comparison; TP1353M for organic non-asbestos disc materials, D7101A for semi-metallic disc materials, and H3198/1199 for drum materials. An asbestos-free organic material offering performance improvements, relative to the baseline, in the areas of increased fade resistance and a higher average coefficient of friction is desired. Likewise, an asbestos-free semi-metallic material offering performance improvements, relative to the baseline, in the areas of increased cold effectiveness and reduced rotor wear is desired.

Submissions to Ford should be accompanied with your test results for both your proposed asbestos-free material and the corresponding baseline material. Ford will conduct structural and performance evaluations in the laboratory and on the dynamometer, and will review all performance data submitted by the supplier. Promising candidates will then be subjected to vehicle evaluations.

It is recommended that all dynamometer and vehicle evaluations be run with Ford test procedures on the 1980 Thunderbird brake system to ensure that the final comparison is as fair as possible. System parameters for the 1980 Thunderbird are given in Attachment II, test procedures will be supplied as requested.

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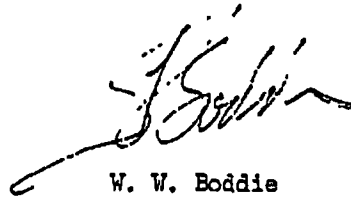
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If you are interested in participating in this program as outlined, please confirm your intention with a brief letter. Material and performance data submissions should be made to the Brake Department at your earliest convenience.

We are looking forward to your participation in this program, as your expertise and cooperation are instrumental in making this a successful program.

Very truly yours,



W. W. Boddie

WJ/ny

attach

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ASBESTOS-FREE BRAKE LINING DEVELOPMENT

1980 CALENDAR YEAR WORK PLAN

Project Objectives

Develop asbestos-free brake lining material, both semi-metallic and organic, to meet requirements of toxic substances regulation.

Technical Approach

1. Inform potential suppliers of program intent
 - . Corporate policy to reduce asbestos usage
 - . Wish to evaluate both non-asbestos semi-met and organic linings for front disc and rear drum applications
 - . Supplier will conduct preliminary tests and present data to Ford
 - . Ford will conduct preliminary laboratory and dynamometer evaluations then vehicle test promising candidates
2. Submission of candidate material(s) should be accompanied with the following performance data for both submission and relative baseline:
 - . PGC, FAST, Cogan Hardness, Specific Gravity
 - . Dynamometer Temperature - wear
 - . Dynamometer Effectiveness and fluid displacement (Simulated FMVSS 105-75)
 - . Static friction test for rear drum linings
 - . Vehicle City Traffic and effectiveness performance (Optional)
3. Work with Scientific Research to evaluate candidates using the following tests:
 - . FAST
 - . Susceptability of corrosion bonding to cast iron
 - . Tensile strength - transverse and longitudinal
 - . Shear strength
 - . Rivetability
 - . Thermal expansion coefficient - transverse and longitudinal
 - . Dynamometer - wear procedure and FMVSS 105 simulation
 - . Contaminant sensitivity
- Provide feedback to suppliers on test results of their submissions, identify properties which need improving

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5. Install promising candidates on vehicle

- . Supplier Evaluation
 - . City Traffic (Detroit, Los Angeles, Minneapolis)
 - . Fleet Build
 - . FMVSS 105-75 simulation
- . Ford Evaluation
 - . City Traffic (Detroit, Los Angeles, Minneapolis)
 - . Fleet Build
 - . Mountain Effectiveness
 - . FMVSS 105-75
 - . Combined Durability F3-571

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ATTACHMENT II

1980 THUNDERBIRD SYSTEM PARAMETERS

Weights	<u>Front</u>	<u>Rear</u>	<u>Total</u>
GVWR	2306	2058	4364
2 Passenger	2149	1491	3640
Brake Test Weight	2204	1905	4109
Wheel Base	105.5 in		
Rolling Radius	12.4 in		
Vertical center of gravity	6.2 in from CL of spindle		
Rear wheel cylinder	13/16 in		
Proportioning valve	300/.36		
Line pressure at 150 lbs pedal effort	1500 lb/in ²		

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