DE LOREAN MOTOR COMPANY

MEMORANDUM

TO: C. R. Brown
John Z. De Lorean
Robert M. Dewey ✓

FROM: William T. Collins

DATE: May 2, 1977

SUBJECT: Product Status Report

I Prototype No. 2

1) Underbody

Modelling of revisions to the rear of the lower underbody has been completed and will be laid up this week.

A change to the center tunnel has been released to the shop which permits the new fuse block location and clearance for the gear shift tube boot.

The last underbody rework will be released this week to provide a low horizontal radiator mounting. This has four major advantages:

a) Permits pusher fans for better efficiency.

b) Less restriction for the air outlet.

c) Adds 0.5 cubic feet to the luggage volume.

d) Uses the radiator and condenser in frontal crush.

The only disadvantage is a reduction in the size of the front, cross car, beam to 4" x 7".

2) Plumbing, Wiring and Controls

The location of these major systems for Prototype No. 2 is outlined on the attached sheet.

3) Rear Sub Frame and Suspension

Revisions for the R-30 are basically completed and the rear sub frame will be released for fabrication this week.

4) Roof Spider

Drawings have been released to rework the pine die models for hand lay up tooling of an inner and outer roof spider.

Parallel to this is the fabrication of a steel pillar and epoxy tools for various ERM pillars so that the ERM construction can be adjusted to provide the same stiffness as the steel pillar. These parts will be physically loaded in torsion and bending to determine their actual physical properties.

II. Cowl and HVAC

To date we have not been able to find an existing unit that is even close to our package requirements. The basic design of a year ago by HRD was reviewed with Bill de Beaubien and appears completely feasible. Lone Star of Texas has indicated an interest in doing the entire job and we expect an answer from them this week.

After much thought and many sketches, it appears that the cowl construction concept used in the first prototypes is still the best with minor modifications:

1) Access panel in the front wall for installation of the HVAC module, wipers, fuel connections, wiring, etc.

2) Close off top of plenum, using the ERM for mounting of the wiper transmissions, fluid reservoirs, etc.

3) Separating the front pillar facings from the "red part" for better build along with other minor changes to "desensitize" the build.

III. Front Suspension

Selection of an existing suspension is proceeding slowly due to slow receipt of information from the

various sources. The attached sheet summarizes what we know and are considering to date.

IV. Fuel Cell

Preliminary pricing indications from Goodyear for a bladder type tank are $100 - prohibitive. We will proceed with a blow molded tank which will be trapped between the upper and lower underbody halves.

If service is required, the procedure will be to cut an access panel out of the bottom of the lower underbody surface.

V. Crush Development

The first underbody sections made by Applied Composite Technology were too thick and porous to run in the crusher. Peter Hofer has worked with them in revising their formulation and, hopefully, if the new system works, we should have parts in two weeks.

VI. ACRS Development

Seven sled shots have been conducted to date with the following results:

Passenger survived in two runs as follows:

1) Run No. 5 - 43.7 mph-air bag and I/P surface moved rearward two inches.

   Severity Index - Head, 700; chest, 600 with 1860 lbs. and 960 lbs. femur loads.

2) Run No. 6 - 43.0 mph - Filter burned out, increasing the output by an unknown amount.

   Severity Index - Head, 750; chest, 700 with femur loads of 1380 and 1130 lbs.

In all of the runs the femur loads have been good, indicating the basic design approach is Ok. For the passenger's side, I prefer not to pull panel rearward but investigate increased generator output and reduce ignition time.

Driver is not doing well. Need to investigate a collapsing wheel to reduce chest loading at the bottom and rearward rotation at the top for bag support.

VII ERM Development

We are working with Peter Hofer and Terry Werrell on some of the major parameters of production of ERM. Such areas as part tolerance and shape as well as optimum mold sizes are being revised.

VIII Prototype No. 2

It still appears that this can be completed by July 31, 1977, assuming we can return to our original budget on May 15.

WTC/ts

cc: Peter D. Giacobbi
Robert K. Manion
Robert F. McLean
Terry S. Werrell

DMC-12

PROTOTYPE NO 2

PLUMBING, WIRING & CONTROLS

System	Size	Location
Engine Cooling	2 - 38 mm I.D.	Inside L & R Sill Section
Heater Water	2 - 19 mm O.D. Tubing	Inside Tunnel
A/C Freon	1 - 19 mm O.D. Tubing 1 - 12 mm O.D. Tubing	Inside Tunnel Inside Tunnel
Fuel	2 - 8 mm O.D. Tubing	Inside Tunnel
Evap. Emiss.	1 - 5 mm O.D. Tubing	Inside Tunnel
Vacuum Source For HVAC	1 - 5 mm O.D. Tubing	Inside Tunnel
Brake Fluid	1 - 5 mm O.D. Tubing	Between Rocker Cover And Underbody.
Clutch Fluid	1 - 5 mm O.D. Tubing	Between Rocker Cover And Underbody.
Front Wiring Harness		Inside Upper And Lower Underbody.
Main Wiring Harness		Top Of Tunnel Under Console Cover. Fuse Block Under Ash Tray.
Rear Wiring Harness		Between Upper And Lower Underbody.
Gearshift Controls		Top Of Tunnel Under Console Cover
Throttle Control		Top Of Tunnel Under Console Cover

WTC
5/2/77

PDG
5/3/77

FRONT SUSPENSIONS

	Track	Lower Arm	Upper Arm	Current Loading	Jounce	Rebound	Spring Location	Anti Divel	Length of Rack	Steering Max Inside	Steering Max Outside	Rotor Dia	Str Arm Location/Length
DMC	1614	420	200	421Kg	89	101.6	Lower		622.3	35	30	282	Low Front/138
Opel(Old)	1329	340	225		90	86.5	Lower		620	35°-45	33°-20	235	Low Front/120 mm
Ford Pinto		333.5	200				Lower		622.3				Low Front/138
Fiat 132	1321.5	287	254				Upper						Low Rear
Isuzu	1340	303.5	194.5	611Kg	110	70	Lower	10°/10°		36	29	230	Low Front/146 mm
Dodge 3700							Torsion Bar						
Lotus	1511	340	225				Lower						Low Front/120
Pacer	1580	305	215	779	100	115	Lower						Low Front/135

COMMENTS:

Dodge 3700	The use of torsion bars would require a complete redesign.
Fiat 132	The spring is located on upper control arm which precludes it for space and structure reasons.
Pacer	Parts are designed to carry more than twice the DMC front load; is heavy.
Isuzu	Has rear steering & complex construction
Opel Ascona	Used on Lotus. Some sacrifice in priciples & may have purchasing problems since this suspension is no longer in production.
Ford Pinto	Used on Proto #1 with modified lower arm. Can be used with some sacrifice in principles.
DMC-12	Prototype #1 used Pinto suspension with modified lower control arm that will require expensive tooling & testing.