



PROJECT REPORT

LT5 PROGRAMME STATUS REPORT

9th January 1988



LT5 ENGINE



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PROJECT SUMMARY

26th January 1988

TECHNICAL STATUS

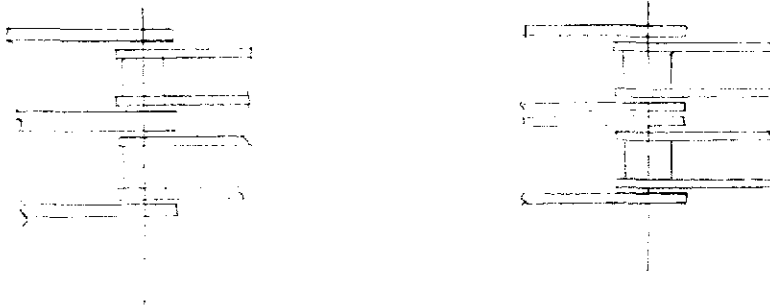
DRIVEABILITY, EMISSIONS, FUEL ECONOMY & PERFORMANCE

- . Cold start development/validation in Kapuskasing, Ontario is going well. Vehicles start and drive at -29 deg. C with a high score rating on the GMUTS driveability test 96 - 100% typical. This has been due to the latest fuel injection software supplied by CPC to Lotus request/specification and our calibration development.
- . Fuel economy and emissions still look good, but latest software level means re-calibration is continuing. Certification is targetted by the end of April.
- . General warmed-up driveability has been improved significantly with new software and calibration.
- . Performance with engines from production tooling is down at present due to reduced airflow through cylinder head - (inlet port mis-match to valve seat) and surface finish and accuracy of other inlet system components from production tooling.

MECHANICAL DEVELOPMENT

- . For the first time an LT5 engine is running on the high speed car durability cycle with a closed circuit breather system. This is a major hurdle 95% overcome, and has never been achieved previously.
- . Modified pattern equipment for the improved lower crankcase with full width S.G. iron bearing cap inserts will be complete by 1 Feb. New parts should be built into engines and running by April.
- . Crankshafts from forging blanks are due 18 May and this lead time dictates some of the durability testing.
- . LT5070, the first validation engine, which has currently run c 10 hours is intended to prove chain integrity, it has the latest production specification Borg Warner chain fitted.

There is material on order for a "back-up" with improved cross sectional area of links, but as yet no delivery dates. This has two thin outer links in place of one thick inner link.



Oil leaks on the engine have been virtually eliminated, but still some concern over the integrity of some of the gaskets which are only now being tested.

The oil pump life remains a worry. Typically it lasts about 50-60 hours on the high speed car cycle. The influence of the crankshaft is causing the inner and outer rotor teeth to scuff causing eventual seizure and inner rotor failure. Crescent type pumps are being tried, and also ways of de-coupling the crankshaft from the inner rotor so that it does not influence the inner rotor.

Build tolerances may also be a cause and alternatives will be tried.

TIMING

Currently 21 days late starting the durability test on the duplex chain, engine LT 5070.

The major validation testing to CD9, Corp. and Chevy durability cycles is also behind schedule by one month. This has been due to repeated rejection of poor quality parts, from not only the new production sources, but also those used during the development phase.

Delivery of engines from Mercury Marine for vehicle durability testing has been delayed for mainly the same reasons and only 1 engine has been received so far from a planned 12.

Achievement of engine durability miles in cars, and hours on test beds remains paramount. A major review on the 9th April requires 800 hours of dynamometer testing to be complete by this date.