



**Detroit Diesel Allison**  
Division of General Motors Corporation

Indianapolis, Indiana 46206

EM-78-C-02-4867

**MASTER**

EDR 9840

GAS TURBINE ENGINES AND TRANSMISSIONS  
FOR BUS DEMONSTRATION PROGRAMS

Technical Status Report  
for Period 31 January 1979 - 30 April 1979

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### Introduction

This technical status report is to fulfill the contractual requirements of Contract EM-78-C-02-4867. This quarterly status report covers the period from 31 January 1979 through 30 April 1979 and is a summary of DDA activities for the effort performed on the procurement of eleven (11) Allison GT 404-4 gas turbine engines and five (5) HT740CT and six (6) V730CT Allison automatic transmissions and the required associated software.

The contract requires the delivery of eleven (11) Allison GT 404-4 Industrial Gas Turbine Engines and five (5) HT740CT and six (6) V730CT Allison Automatic Transmissions for the Greyhound and Transit Coaches, respectively. Engine and transmission delivery to the DOE will be initiated in April 1979 and will be completed by October 1979. In addition, software items such as cost reports, technical reports, installation drawings, acceptance test data and parts lists are required.

A recent decision by the DOE will modify the build configuration for the last four (4) Transit Coach engines. It was decided by the DOE at a meeting in Washington, D.C. on March 28, 1979 with representatives from DDA, NASA/LeRC, JPL & Booz-Allen & Hamilton that these engines will be built with ceramic regenerators. This early introduction of ceramic regenerators is possible because of the significant progress being made through the Ceramic Applications in Turbine Engines Program (DOE/NASA - CATE) in developing ceramic components for use in highway vehicle gas turbine engines. Use of proven ceramic components from the DOE/NASA-CATE program in the coach engines is consistent with the Coach Demonstration Program objectives.



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The five (5) Greyhound Coach engines and the first two (2) Transit Coach engines will be built in the all-metal configuration. The all-metal Transit Coach engines will be used to verify the coach installation design, power package to vehicle interface systems performance, and overall vehicle operation, but will be converted to the ceramic regenerator configuration prior to commencing revenue service operation.

The Master Schedules for this program are attached. No change in the delivery schedule is anticipated at this time as a result of the decision to include ceramic regenerators in the last four (4) Transit Coach engines.

The program is progressing as planned and all items are on schedule for delivering the first engine/transmission at the end of April 1979.

Status

Detroit Diesel Allison Management was successful in keeping the DOE proposed coach demonstration schedule by advance releasing eight (8) of the eleven (11) GT 404-4 gas turbine engines five months before the engine/transmission hardware contract was signed. Critical long lead hardware for these engines was placed on procurement in early April 1978. The remaining hardware has since been sequentially released at a rate necessary to maintain the required delivery schedule. Upon receipt of the signed contract in late August 1978, DDA proceeded to release the remaining three (3) engines and all eleven (11) transmissions. Many of the hardware items required for the eleven (11) engines and transmissions have been received.



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The first Greyhound Coach engine, S/N T5, and the HT740CT transmission are now being assembled and it is expected that the power package will be available for delivery at the end of April 1979 to meet the contract schedule.

Assembly of the Transit Coach engine, S/N T10, is also in progress. This engine will be used in the acceptance testing of the six (6) V730CT transmissions. Upon completion of this task, the engine will be refurbished and delivered as the last engine under the contract.

#### Deliverable Items

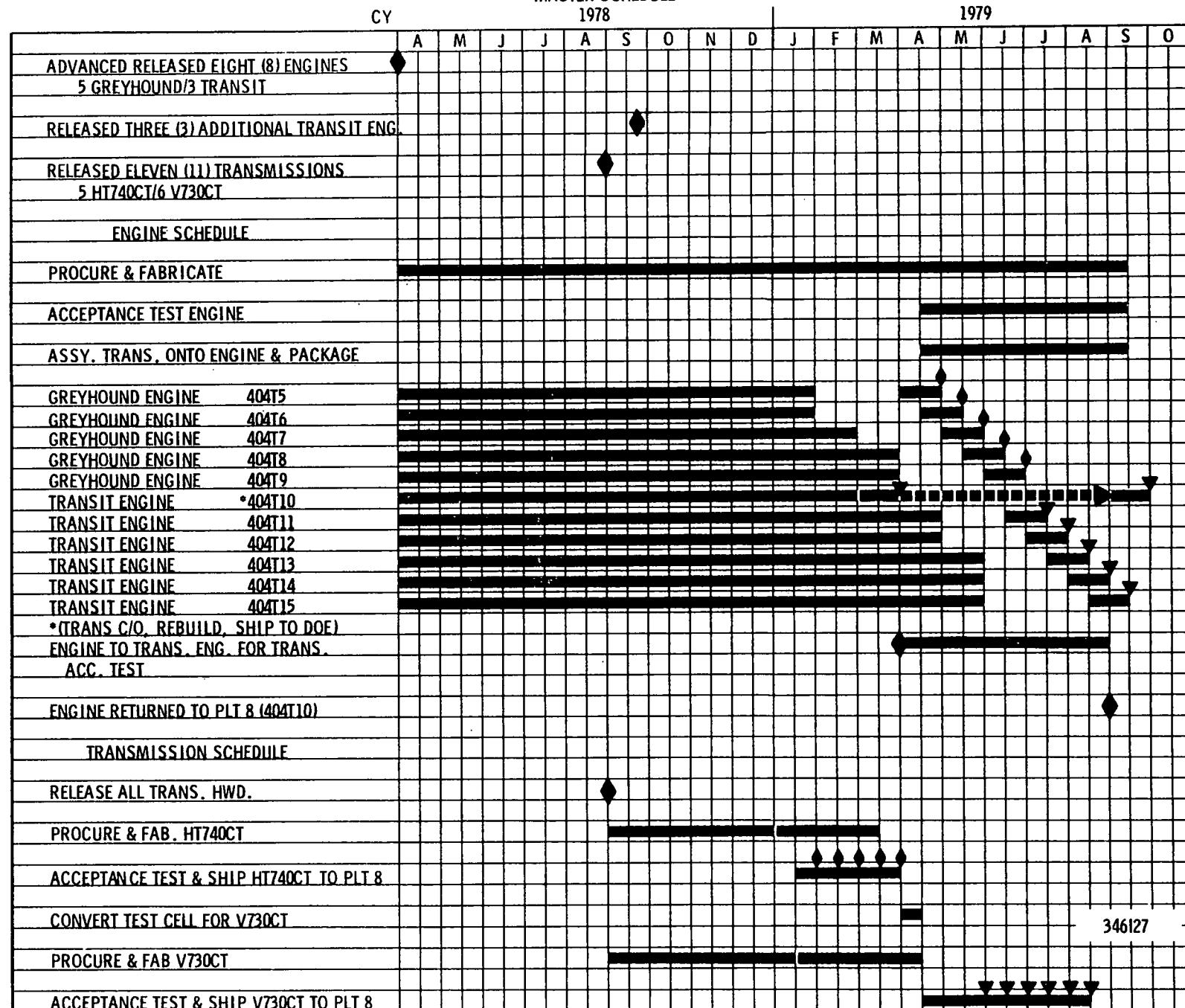
The Monthly Cost Report for April 1979 is being submitted under separate cover. The Monthly Cost Reports for October 1978 through March 1979 were delivered to the DOE on schedule.

With the submission of this technical status report and the shipment of the first Greyhound Coach engine/transmission power package at the end of April 1979, DDA contractual obligations will have been fulfilled on schedule.

#### Spare Hardware

This contract does not provide for procurement of spare engine or transmission hardware to support the Coach Demonstration Programs. Spare hardware will be provided in a separate coach support contract with NASA/LeRC now being proposed.

DOE ENGINE/TRANSMISSION HARDWARE PROGRAM  
MASTER SCHEDULE



346127

**DOE ENGINE/TRANSMISSION HARDWARE PROGRAM  
MASTER SCHEDULE**

6

1978

1970

CONTRACT START DATE

CONTRACT SIGNED

CONTRACT PERFORMANCE PERIOD

POWER PACK DELIVERY

DELIVERABLE ITEMS:

HARDWARE

FIVE (5) IGT404-4/HT740CT

SIX (6) IGT404-4/V730CT

ASSY, ACCESSORY DRIVE EQUIP.

PAINT/PACKAGE/SHIP LOOSE COMP.

DOCUMENTATION

ENGINE MAP (ONE TYPICAL)

ACCEPTANCE TEST DATA (ENG/TRANS)

PARTS LIST (ENG/TRANS)

OPERATION & MAINT. INST.  
(ENG/TRANS)

TECH. DATA & INST. DWGS.

REPORTING REQUIREMENTS

COST REPORTS

TECHNICAL STATUS REPORT

SCIENCE INFORMATION REPORTS

FINAL REPORT

HOT LINE REPORT (AS REQ'D)

CONFERENCE REPORT (AS REQ'D)

PLANT & EQUIP. CHANGE (AS REQ'D)

NON TECHNICAL REPORT (AS REQ'D)

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