SRI International

January 13, 1978

Annual Report

SRI Projects CR 4810
CR 6781
CR 6782

TECHNOLOGY ASSESSMENT OF ALTERNATIVE TRANSPORTATION FUELS

MASTER

Report prepared for:

Dr. Daniel P. Maxfield
Division of Transportation
Energy Conservation
Department of Energy
20 Massachusetts Avenue, N.W.
Washington, D.C. 20545

and

Mr. William Lambert
Department of Energy
San Francisco Operations Office
1333 Broadway
Oakland, CA 94612

Prepared by:

Edward M. Dickson
SRI Project Leader

115-103
AT 03-76 CS 50115

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333 Ravenswood Ave. • Menlo Park, California 94025
(415) 326-6200 • Cable: STANRES, Menlo Park • TWX: 910-373-1246

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A. Research Program

SRI International is performing a study entitled "Technology Assessment of Alternative Transportation Fuels." Previously, the study consisted of three phases: Phase 1 was an extension and refinement of previous SRI work on the impacts of developing synthetic liquid fuels from coal and oil shale for transportation use; Phase 2 is a technology impact assessment of electrification of road and rail transportation; and Phase 3 is concerned with articulating and analyzing public policy options for all the future transportation propulsions alternatives based on the solid fossil fuel resources (coal and oil shale).

Phase 1 (which consisted of Tasks I-A to I-E, II, and III shown in Figure 1) has been completed. Considerable time has been given to two workshops for Task V. We are now under way on the electrification studies of Task IV.

In October, three additional tasks were received from DoE and are now referred to as Phase 4:

Task VII	Improvements and Extensions of the SRI Coal Depletion Model
Task VIII	Diesel Cars in America
Task IX	Transportation Demand in Alternative Futures

Figure 1 shows the linkages between the tasks in all the phases.

For administrative purposes within SRI, the three new tasks have been established as separate projects.

B. Introduction

This annual progress report is being kept brief for three main reasons:

1. The monthly management reports have contained more detail than normally presented in a monthly progress letter.
2. The DoE project officer has kept in close touch with the project leader and key members of the research team.
3. Two final technical reports have been issued and widely disseminated and copies of a presentation made at a DoE contractors' coordination conference have been widely distributed.

FIGURE 1. LINKAGES BETWEEN STUDY TASKS AND PREVIOUS STUDIES

C. Highlights

We present here highlights of the year's accomplishments. Numbers in parenthesis refer to Management Report numbers in which detailed descriptions may be found.

Synfuels Impact

- The Coal Resource Depletion Model portion of this work was presented, by invitation, before a joint audience of the two Houses of the Wyoming Legislature on January 13, 1977.
- A public presentation of the Coal Resource Depletion Model portion of this work was presented to a large, attentive audience in Washington, D.C. at the Quality Inn, Capitol Hill, under ERDA auspices.
- Two final reports (ERDA 76-129/3 and 76-129/4) on this portion of the work were issued in May. They were entitled:
 - Synthetic Liquid Fuels Development: Assessment of Critical Factors. Vol. III: Regionalized Industry, Social Impact, Coal Resource Depletion.
ERDA 76-126/3
 - Synthetic Liquid Fuels Development: Assessment of Critical Factors. Vol. IV: Energy/Economic Comparison of Coal-Based Automotive Energy Supply Systems.
ERDA 76-129/4

Following the release of the reports printed by SRI, ERDA reprinted a large number of reports and DoE/TEC is still disseminating copies.

- At ERDA's request a team member presented an hour long talk entitled "Synthetic Liquid Fuels Development: The Critical Factors" at the 1977 Annual "course" on the Effects of Energy Constraints on Transportation at Union College in Schenectady, New York, in August.

Electric Vehicles

- SRI collaborated with the General Research Corporation in Santa Barbara on the conceptual design of a hybrid battery/gasoline ICE electric vehicle (No. 15).
- SRI advanced a preliminary scenario for the market evolution of hybrid vehicles (No. 15)

- Visits with potentially key electric vehicle stakeholders were begun in earnest in April with discussion at Ford Motor Company (No. 16).
- A team member attended the April 1977 Electric Vehicle EXPO in Chicago to gather data and stakeholder input (No. 16).
- We sent a team member to attend the National Highway Traffic Safety Administration hearings on electric vehicle safety in Washington, D.C. in July 1977 (No. 19).
- A team member who was in Sweden on other business was able to visit researchers at AGA Company who are working jointly with Saab on electric vehicles. He examined and rode in the AGA/Saab experimental Swedish postal vehicle and saw the AGA/ESB advanced Ni-Zn battery (No. 21).
- A systems dynamic model of the electric utility industry was completed. It will be used to gauge impacts of electric vehicles on electric utilities (No. 22).
- A revised market evolution scenario for battery/electric vehicles was prepared and issued. A paper based on this scenario was presented at the DoE Electric Vehicle Contractors' Coordination Conference in Reston, Virginia, in December (Attachment to No. 23).
- An outline of the electric vehicle impact study final report was prepared and submitted (No. 20).

Railroad Electrification

- A "Private Enterprise with Federal Aid" railroad electrification scenario was prepared (No. 17).
- Two team members attended the national conference "Railroad Electrification: The Issues" in Washington, D.C. in June 1977 (No. 18).
- A systems dynamic model of the railroad industry was made and described. It is being used to gauge the impact on railroads and other stakeholders of railroad electrification (No. 18).
- Several meetings have been held with personnel of the Federal Railroad Administration to present the structure of our railroad industry model and the results it gives when our electrification scenario is modeled.
- An outline of the final report on our railroad electrification impact study was prepared and submitted (No. 20).

New Tasks

- Work was started on three new tasks
 - Improvements and extensions of the coal resource depletion model.
 - Origins of increased interest and sales of diesel cars in the United States.
 - Transportation demand in alternative plausible U.S. futures. A draft report on a portion of this work has been submitted to DoE.

D. Financial Report

During the second year of the study (January 1, 1976 to January 1, 1977), funds were expended as follows:

Task I	\$53,373
Task II	2,961
Task III	4,445
Task IV	
Electric Vehicles	\$83,109
Railroad Electrification	88,058
Task V	
Workshops	\$ 838
Subcontract	38
Task VI	0
Task VII	9,721
Task VIII	10,749
Task IX	21,315

Personnel who made significant contributions to our work this year, and the number of hours of their involvement are the following:

Phase 1 Impacts of Synfuel Development

Edward Dickson	111
Roy Hays	83
Cynthia Kroll	54
Robert Steele	27
Irving Yabroff	22

Phase 2 Electric Vehicles and Railroad Electrification

Rita Denny	64
Daniel Dick	205
Edward Dickson	332
Roy Hays	181
Mary Ivory	174
Cynthia Kroll	259
William Lee	130

Phase 2 Electric Vehicles and Railroad Electrification (Cont.)

Judith Monaco	275
Albert Moon	46
Peter Newgard	52
Steven Proctor	163
Barry Walton	694
Ronald White	564
Peter Wong	89
Irving Yabroff	783
Allen Zink	703

Phase 3 Coal Model Improvement

Roy Hays	28
Judith Monaco	36
Irving Yabroff	95

Phase 3 Diesel Cars

Edward Dickson	9
Richard Goen	220
Mary Ivory	23
Benjamin Suta	5