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# HIGH-SPEED GROUND TRANSPORTATION

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## HEARING

BEFORE THE

SUBCOMMITTEE ON SURFACE TRANSPORTATION

OF THE

COMMITTEE ON COMMERCE

UNITED STATES SENATE

NINETY-FIRST CONGRESS

SECOND SESSION

ON

### S. 3730

TO EXTEND FOR ONE YEAR THE ACT OF SEPTEMBER 30, 1965, AS AMENDED BY THE ACT OF JULY 24, 1968, RELATING TO HIGH-SPEED GROUND TRANSPORTATION, AND FOR OTHER PURPOSES

JUNE 4, 1970

Serial No. 91-64

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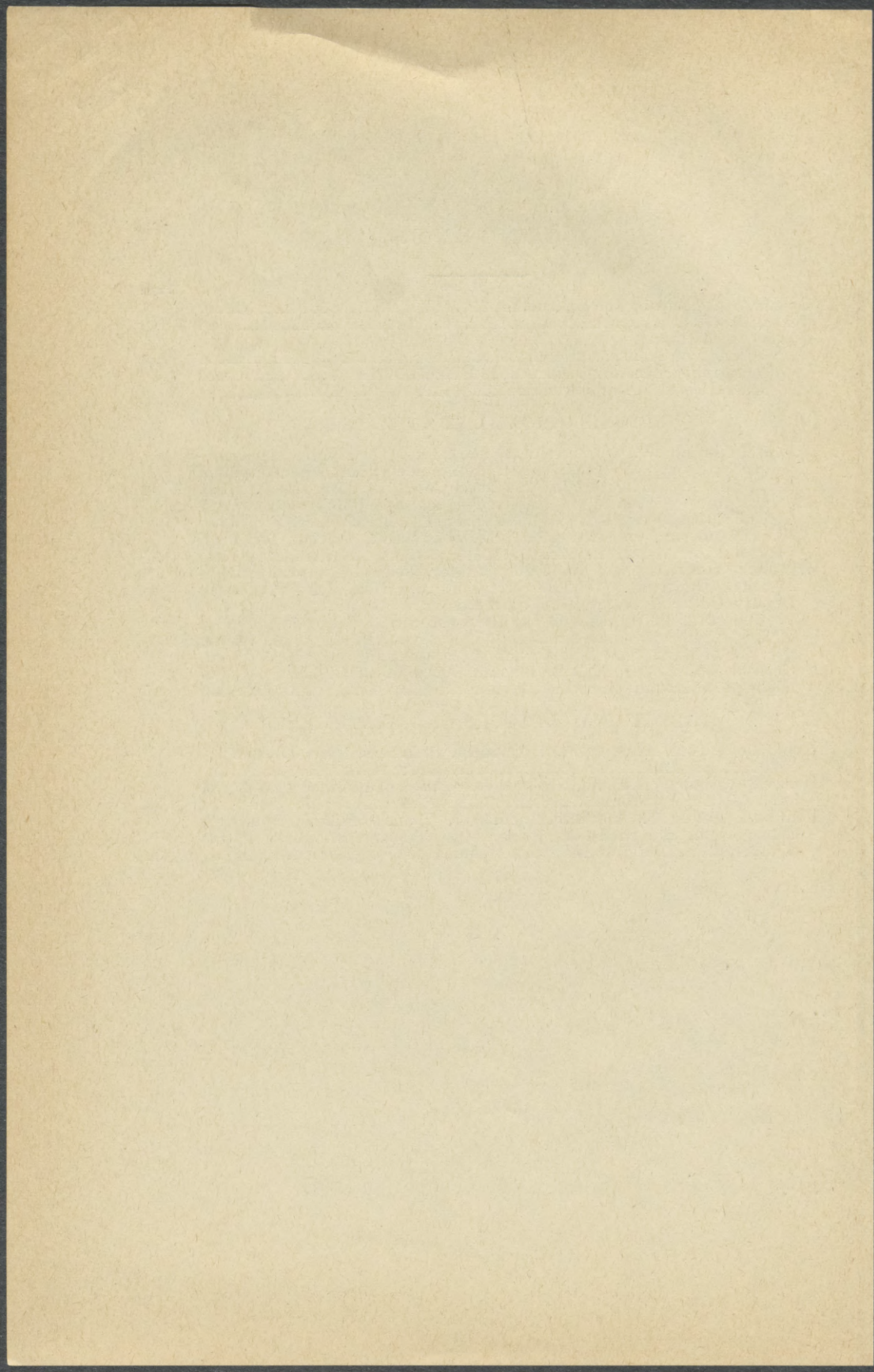
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# HIGH-SPEED GROUND TRANSPORTATION

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THURSDAY, JUNE 4, 1970

U.S. SENATE,  
COMMITTEE ON COMMERCE,  
SUBCOMMITTEE ON SURFACE TRANSPORTATION,  
*Washington, D.C.*

The subcommittee met, pursuant to notice, at 10 a.m., in room 5110, New Senate Office Building, Hon. Vance Hartke (chairman of the subcommittee) presiding.

Present: Senators Hartke and Pearson.

## OPENING STATEMENT BY THE CHAIRMAN

Senator HARTKE. The committee will come to order.

The hearings we are commencing here this morning are for the purpose of considering the administration's proposal, S. 3730, to extend the High-Speed Ground Transportation Act of 1965 for one more year, that is, until June 30, 1972, and to authorize the appropriation of \$21.7 million for the fiscal year ending June 30, 1971.

Because of the great importance of this act on railroad passenger travel and in all future transportation planning and development, it is incumbent upon the Congress to learn what has been accomplished under the act in the past, what is proposed for the future, and when it is proposed to happen.

The most visible aspect of the activity under the High-Speed Ground Transportation Act has been the metroliner operation between Washington, D.C., and New York, N.Y. The service has been heralded throughout the country as the answer to improving transportation conditions, especially in densely populated areas. It has revitalized interest in railroad passenger service.

In spite of all the acclaim, however, the metroliner and the well-known turboliner have had their problems. The metroliner demonstration has never really started. It was originally scheduled to start in October of 1967, but it has not. I hope this morning we can learn more about the problems as well as the successes.

Another part of the program has been the research and development efforts. We are now hearing about such things as linear induction propulsion, tracked air-cushion vehicles, vertical and short takeoff landing, commonly called VTOL and STOL, tube vehicle systems, and things of that kind.

What can be expected in the way of immediate relief from these R. & D. efforts? Least known but perhaps the most significant en-

Staff member assigned to this hearing: A. Daniel O'Neal.

deavor has been the "Northeast Corridor Transportation Project Report," which was released by the Department of Transportation in April of 1970. Having taken some 5 years to complete, the report should contain some valuable information. In my opinion too many studies are completed and promptly ignored. The committee has a responsibility to learn how the results of this study will be used.

The High-Speed Ground Transportation Act transcends any particular mode of transportation. Properly administered, it holds the promise of contracting toward a better balanced and more efficient transportation system. It is my hope that these hearings will produce a thorough discussion of the past and present developments and the future prospects under this act.

(The bill and agency comments follow :)

[S. 3730, 91st Cong., second sess.]

A BILL To extend for one year the Act of September 30, 1965, as amended by the Act of July 24, 1968, relating to high speed ground transportation, and for other purposes

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That (a) the first sentence of section 11 of the Act entitled "An Act to authorize the Secretary of Transportation to undertake research and development in high-speed ground transportation", approved September 30, 1965 (Public Law 89-220; 79 Stat. 892; 49 U.S.C. 1631-1642), as amended, is amended by striking out ", and" and the period at the end thereof and inserting a semicolon and the following: "and \$21,700,000 for the fiscal year ending June 30, 1971."

(b) The first sentence of section 12 of such Act of September 30, 1965, as amended, is further amended by striking out "1971" and inserting in lieu thereof "1972".

THE SECRETARY OF TRANSPORTATION,  
Washington, D.C., March 20, 1970.

HON. SPIRO T. AGNEW,  
President of the Senate,  
Washington, D.C.

DEAR MR. PRESIDENT: There is transmitted herewith a proposed bill:

"To extend for one year the Act of September 30, 1965; as amended by the Act of July 24, 1968, relating to high-speed ground transportation, and for other purposes."

The draft bill would extend the high-speed ground transportation Act, Public Law 89-220, as amended, for one year. The Act is now scheduled to expire on June 30, 1971. The draft bill provides that the expiration date will be extended to June 30, 1972. The bill further provides for a new appropriation authorization of \$21,700,000 for the fiscal year ending June 30, 1971. This appropriation authorization is consistent with the President's budget message.

During the past five years of its existence the Office of High Speed Ground Transportation has had the responsibility of implementing the high-speed ground transportation Act. We are pleased to report that many of the research projects begun early in the program have now reached completion. The results of this research are ready for transition into the development phases of the program preparatory to their reduction to usable, efficient, economical transportation hardware.

This one-year extension will provide the Office of High Speed Transportation the opportunity to effect the transition while future requirements are programed.

The Bureau of the Budget has advised that the enactment of this proposed legislation is in accord with the program of the President.

Sincerely,

JAMES M. BEGGS,  
Acting Secretary.

[Enclosures.]

A bill to extend for one year the Act of September 30, 1965, as amended by the Act of July 24, 1968, relating to high-speed ground transportation, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That (a) the first sentence of section 11 of the Act entitled "An Act to Authorize the Secretary of Transportation to undertake Research and Development in High-Speed Ground Transportation", approved September 30, 1965, (P.L. 89-220; 79 Stat. 892; 49 U.S.C. 1631-1642), as amended, is amended by striking out ", and" and the period at the end thereof, and inserting a semicolon and the following: "and \$21,700,000 for the fiscal year ending June 30, 1971."

(b) The first sentence of section 12 of such Act of September 30, 1965, as amended, is further amended by striking out "1971" and inserting in lieu thereof "1972."

*Budget estimates for fiscal year 1971*

[Millions of dollars for fiscal year 1971]

Engineering research and development :

|                               |       |
|-------------------------------|-------|
| Systems engineering.....      | \$0.5 |
| High-speed rail research..... | 3.3   |
| Unconventional systems.....   | 8.7   |
| Advanced technology.....      | 4.9   |
| High-speed test facility..... | .9    |
|                               | <hr/> |
|                               | 18.3  |
|                               | <hr/> |

Demonstrations :

|                                       |       |
|---------------------------------------|-------|
| Washington-New York (metroliner)..... | .2    |
| Boston-New York (turbotrain).....     | .9    |
| Data collection.....                  | 1.2   |
|                                       | <hr/> |
| Total .....                           | 2.3   |
|                                       | <hr/> |

|                      |       |
|----------------------|-------|
| Administration ..... | 1.1   |
|                      | <hr/> |

|  |      |
|--|------|
| Total office of high-speed ground transport..... | 21.7 |
|--|------|

Section by section analysis of "a bill to extend for one year the act of September 30, 1965, as amended by the act of July 24, 1968, relating to high speed transportation, and other purposes."

(1) Subsection (a) of the draft bill amends section 11 of the Act of September 30, 1965 (Pub. L. 89-220, 79 Stat. 892, 49 U.S.C. 1631-1642), as amended by the Act of July 24, 1968, to authorize an appropriation of \$21,700,000 for research and development and demonstrations in high speed ground transportation during fiscal year 1971.

(2) Subsection (b) of the draft bill amends section 12 of the Act of September 30, 1965, as amended, to extend that Act from June 30, 1970, to June 30, 1971.

OFFICE OF THE SECRETARY OF TRANSPORTATION,  
Washington, D.C., May 4, 1970.

HON. WARREN G. MAGNUSON,  
Chairman, Committee on Commerce,  
U.S. Senate, Washington, D.C.

DEAR MR. CHAIRMAN: This is in reply to your request for the views of this Department with respect to S. 3730, a bill:

"To extend for one year the Act of September 30, 1965, as amended by the Act of July 24, 1968, relating to high-speed ground transportation, and for other purposes."

This bill is a Department of Transportation proposal which was submitted to the Congress on March 20, 1970. As you know, the bill would extend the High-Speed Ground Transportation Act for one year. The present Act would expire on June 30, 1971. S. 3730 would extend the expiration date to June 30, 1972, and

would provide a new appropriation authorization of \$21,700,000 for the fiscal year ending June 30, 1971.

We recommend enactment of the legislation, and will welcome the opportunity to appear before the Committee to present oral testimony in support of it.

Sincerely,

JAMES A. WASHINGTON, JR.

COMPTROLLER GENERAL OF THE UNITED STATES,  
*Washington, D.C., May 6, 1970.*

HON. WARREN G. MAGNUSON,  
*Chairman, Committee on Commerce,  
U.S. Senate*

DEAR MR. CHAIRMAN: Reference is made to your letter of April 20, 1970, requesting our comments on S. 3730.

The bill would extend for one year, through June 30, 1972, the program of research and development in high-speed ground transportation undertaken by the Secretary of Transportation, through the Office of High Speed Ground Transportation, pursuant to authority granted in the act of September 30, 1965, 79 Stat. 893, as amended, 49 U.S.C. 1631 *et seq.* The bill further would authorize the appropriation of the sum of \$21,700,000 for the fiscal year ending June 30, 1971. The present act of September 30, 1965, as amended, is now scheduled to terminate on June 30, 1971.

While we have a statutory duty to audit expenditures made under the program, we have no responsibility for the implementation and administration of this research and development program. Therefore, and since the matter involves a question of policy for the consideration of the Congress, we make no recommendation as to the action to be taken by your Committee.

On line 7, page 1 of the bill, the correct statutory citation should be 70 Stat. 893 rather than 70 Stat. 892.

Sincerely yours,

ELMER B. STAATS,  
*Comptroller General of the United States.*

UNITED STATES OF AMERICA,  
GENERAL SERVICES ADMINISTRATION,  
*Washington, D.C., May 15, 1970.*

HON. WARREN G. MAGNUSON,  
*Chairman, Committee on Commerce, U.S. Senate,  
Washington, D.C.*

DEAR MR. CHAIRMAN: Your letter of April 20, 1970, requested the views of the General Services Administration on S. 3730, 91st Congress, a bill "To extend for one year the Act of September 30, 1965, as amended by the Act of July 24, 1968, relating to high-speed ground transportation, and for other purposes."

The Act of September 30, 1965, as amended by the Act of July 24, 1968, authorizes the Secretary of Transportation to undertake research and development in high-speed ground transportation. Unless amended as proposed in S. 3730, the Act, except for one section, will terminate on June 30, 1971.

Because of its responsibility for traffic management on behalf of executive agencies, from the viewpoint of a user of transportation services GSA favors legislation designed to improve intercity ground transportation, and recommends enactment of S. 3730.

The Bureau of the Budget has advised that, from the standpoint of the Administration's program, there is no objection to the submission of this report to your Committee.

Sincerely,

ROD KRAGER, *Assistant Administrator.*

Senator HARTKE. The first witness we will hear this morning will be the Honorable Reginald N. Whitman, Administrator of the Federal Railroad Administration of the Department of Transportation, and with him the Honorable John P. Olsson, Deputy Under Secretary of the Department of Transportation.

STATEMENT OF THE HONORABLE REGINALD N. WHITMAN, ADMINISTRATOR, FEDERAL RAILROAD ADMINISTRATION, DEPARTMENT OF TRANSPORTATION; AND HON. JOHN P. OLSSON, DEPUTY UNDER SECRETARY, DEPARTMENT OF TRANSPORTATION; ACCOMPANIED BY ROBERT T. SMITH, CHIEF OF THE DEMONSTRATION DIVISION IN THE OFFICE OF HIGH-SPEED GROUND TRANSPORTATION; MYLES B. MITCHELL, ACTING DIRECTOR OF HIGH-SPEED GROUND TRANSPORTATION; AND EDWARD J. WARD, CHIEF OF THE ENGINEERING RESEARCH AND DEVELOPMENT DIVISION, OFFICE OF HIGH-SPEED GROUND TRANSPORTATION

Mr. WHITMAN. Good morning, Mr. Chairman, members of the committee, I appreciate this opportunity to appear before you today in support of S. 3730, the Department's bill extending for an additional year the statute establishing the high-speed ground transportation program.

I have with me this morning on my right Mr. John P. Olsson, the Deputy Under Secretary of the Department of Transportation. On his right is Mr. Robert T. Smith, the Chief of the Demonstrations Division in the Office of High-Speed Ground Transportation; on my immediate left, Mr. Myles B. Mitchell, Acting Director, Office of High-Speed Ground Transportation; and to his left, is Mr. Edward J. Ward, Chief of the Engineering Research and Development Division, Office of High-Speed Ground Transportation.

S. 3730 contains two amendments to the existing law. One changes the expiration date of the statute to June 30, 1972. The other authorizes appropriations in the amount of \$21.7 million for fiscal year 1971. We have prepared a breakdown of how we propose to utilize these funds which we would like to submit for the record at this time. No other amendments, of substance or procedure, are proposed.

If funds are appropriated to the full extent of this additional spending request for the fiscal 1971 budget, we shall have had a total appropriation of \$97.7 million for the 6 years of the program compared to \$90 million initially authorized in 1965 for just the first 3 years.

I am sure you are very interested in why we are asking for only a 1-year extension of the act instead of one for a longer period. We are in the process of relating all Department R. & D. into a well coordinated effort that will be responsive to the demands for a technical revolution in our transportation systems. Many of the research projects initiated early in the OHSGT R. & D. program are reaching the advanced stages of development and can have great impact on the planning of similar advanced projects in other modes of transportation.

Also, new research projects which we are about to initiate in high-speed ground must be coordinated with other programs affecting urban mass transportation, highways, and the implementation of such aviation programs as VTOL and STOL service. It is necessary, therefore, to have all of these programs in the proper sequence of planning. This 1-year extension request for high-speed ground R. & D. will give us the opportunity to fully integrate the next year's planning into the total Departmental picture.

Proper integration and utilization of the total Departmental R. & D. facilities is another consideration in our extension request. The De-

partment will acquire on July 1, NASA's Electronic Research Center at Cambridge, Mass. We will use this new capability for R. & D. on advanced systems and technological development. Also, the development of the high-speed ground test site in Colorado will give us new testing and development capabilities.

The research and testing programs of these two facilities must be closely coordinated and this 1-year extension will enable us to accomplish this. Another factor not clearly defined at this time is final congressional action on the proposal to establish a public-private corporation to run intercity rail passenger service. If the plan wins congressional approval, we will want to relate the demonstration projects of the high-speed ground program to the role of the newly established passenger train corporation.

Support for the High-Speed Ground Transportation Act of 1965, both within the Congress and elsewhere, reflected a concern about the future of transportation in developing urbanized regions in the United States, particularly the densely populated northeast corridor between Washington, D.C., and Boston, Mass. Sharply increasing demands for transportation in the northeast corridor and the decreasing capability of existing transportation facilities to meet these demands was the major theme of two key reports—one in 1962 and one in 1964—which led to the High-Speed Ground Transportation Act.

Both reports suggested that improved rail service might offer a short-term solution to the problem of increasing demand for transportation in the region. But they also recognized the clear needs for longer range analysis to ascertain future growth, exploration of possible new technologies and identification of the transportation systems which would be the most effective in serving this growth. On the latter point, the Department has submitted the "Northeast Corridor Transportation Project Report of April, 1970." This report provides a substantial amount of information about the prospects of intercity passenger service in the northeast corridor.

The report indicates that the auto will continue to serve the vast majority of travelers, regardless of technological or service improvements in other modes. The report, however, suggests that in considering future transportation investment policies, attention should be given to various alternatives including more effective use of the existing rail capability, shorthaul air technology, and more adequate supporting urban transit. High-speed ground systems were found to have the potential of attracting a significant number of passengers, but the investment costs are high. If the advantages of ground systems, such as relief of highway and airport congestion and greater safety are to be realized, then more R. & D. to lower the cost is a solid investment for the future.

The improvement in predictive and analytical capabilities achieved by the northeast corridor transportation project methods may, with additional refinements, improve our decisions with respect to large magnitude investments which in some cases could be as high as \$1-\$2 billion over the next 10-20 years.

In addition, those expenditures that are made might thus be more efficiently planned and managed. I suggest that the "Executive Summary" contained in the northeast corridor report be included in the record of this hearing.

In 1968, at the time of the first request for an extension of the high-speed program, the administration introduced to this committee an explanatory statement which helped to bring the program into focus, reviewed background development, summarized accomplishments, discussed current status of work in progress, and outlined proposed continuing activity. In effect, this statement served also as a report on the third year of activity under the program in accordance with the statutes. Subsequently a "Third Report" in July of 1969 carried the story through the fourth fiscal year of the high-speed program. The fourth report is now in preparation.

Let me briefly provide a current status report on some aspects of both the R. & D. and demonstration programs.

The High-Speed Ground Transportation Act authorized the Secretary of Transportation to "undertake research and development in high-speed ground transportation." Major objectives of the program are:

1. To advance the technology of ground transportation including railroads as well as more advanced systems;
2. To conduct research and development to make possible the design and demonstration of advanced ground transportation equipment, systems, and services; and
3. To develop cost and performance data on potential systems for intercity transportation.

The HSGT R. & D. program is structured to explore technology in several speed ranges. The higher the speed the longer the technology will require for development.

High speed rail is considered satisfactory for speeds of at least 150 m.p.h.; tracked air cushion vehicles (TACV's) for speeds up to 300 m.p.h.; and tube vehicles are looked to for speeds up to 500 m.p.h.

High speeds are desired to lower travel time, but as the corridor report points out, door to door average speed is far below terminal to terminal average speed due to difficulty in traveling to and from terminals and delays at terminals.

Therefore, the HSGT R. & D. program includes an alternate approach to achieving lower door to door time systems which combine the flexibility of the private automobile with a high-speed mode.

In the high-speed rail R. & D. programs the four DOT rail research cars will continue to gather information on track, suspension, and ride quality and improvement of components; the program to develop lower maintenance track costs will reach field test; and under a joint program with UMTA construction of a wheel rail laboratory will start for the testing of rail vehicle suspensions and running gear to assure safer and better riding equipment and realization of the full potential of steel wheel on steel rail technology.

With respect to TACV's an experimental vehicle is being designed now and construction will start early in 1971. Information gained from tests of this vehicle will advance technology from the present prototypes of 150 to 180 m.p.h. to 300 m.p.h. Data are needed on air cushions, secondary suspensions, aerodynamics, and propulsion.

Propulsion of the experimental vehicle will be through a linear electric motor. Electric propulsion has been chosen because of low noise and pollution; a linear motor is necessary for a vehicle without wheels.

Meanwhile, we already have a 2,500 horsepower linear motor in a wheeled vehicle undergoing low-speed tests and design of an 8,000 horsepower motor for the TACRV has been started. Fabrication of this motor and the associated power conditioning equipment is expected to start in 9 months.

During the coming year, work will begin on systems where the vehicle is suspended below the guideway. The vehicles may be wheeled or air cushion and the required elevated guideway may be cable supported or of more conventional rigid construction.

Cable supported guideways hold promise of low cost. These systems are interesting because of an ability to take sharp curves at higher speeds combining with the prospect of improved aesthetics over elevated systems with overriding vehicles.

In January 1970, Secretary Volpe announced selection of a site near Pueblo, Colo., for construction of HSGT testing facilities. The wheel-rail laboratory is to be constructed there in 1972.

The linear motor vehicle will be moved to Pueblo as soon as a test track for high-speed testing can be constructed and will be the first test program to be constructed at the site, starting in early 1971.

The TACV experimental vehicle is expected to follow in 1972 and automobile related systems, suspended vehicle systems and tube vehicle systems in subsequent years.

While it may be that the ideal ground transportation system for the future will be under the surface, we fully realize that both the technology for a tube system and a major reduction in tunneling costs are still a long way off.

At this time tube vehicle systems appear to be feasible; however, final conclusions cannot be drawn until further studies and research are completed in the fields of gas dynamics, high-speed wheel-rail interaction and tunneling.

We intend, therefore, to continue research in the tube vehicle program, which potentially could offer speeds up to 500 m.p.h. with the use of evacuated tubes and a magnetic suspension system. The magnetic suspension research is one of the projects to be undertaken at the DOT transportation system center (the NASA Electronics Research Center to be transferred July 1, 1970).

Our tunneling research, which leads the field in this country, offers continuing encouragement that the cost barrier will eventually be broken. Studies to date indicate that if the cost of tunneling can be reduced, tube vehicle systems will be cost competitive with other modal forms, and at the same time will offer the advantage of increased safety, high speed and all-weather operation.

The automobile-related systems program is to be conducted in cooperation with the Federal Highway Administration and is geared toward the development of control systems and other hardware that can incorporate the privacy and flexibility of an automobile with the comparable safety, high speed and pollution levels of rail systems.

The control concepts for reservations, merging and headway are to be tested with small electrically powered vehicles as a first step toward prototype demonstrations.

With additional research, prospects appear excellent for development of the obstacle detection and communications systems that are essential to the safety of high-speed ground operations, whatever the mode.

As an example of the wide range of technical effort in the high-speed ground program and the Northeast Corridor transportation project, 120 technical reports have been sent to the Clearinghouse for Federal Scientific and Technical Information during the last 2 years. Many of these reports serve as the basis of designs of experimental and prototype equipment.

As you know, two rail demonstration programs have been funded, a rail airport access demonstration is in planning and the possibility of a TACV airport access demonstration as a joint program with UMTA is being explored for early implementation.

Despite the fact that the formal metroliner demonstration has not begun, the level of operation conducted by the carrier itself has exposed significant service features to public reaction.

These include the country's first two-way, continuous-route, commercial, on-train telephones; experimental passenger and luggage speed-ramp at Baltimore; metroclub means served at seat; and the first computerized reservations and ticketing system for rail passenger transportation service.

Telephone inquiry and ticket-selling procedures are not yet completely satisfactory, but have been progressively improved since metroliner service started.

In April, the latest month for which figures are available, the load factor on metroliners average more than 70 percent. On-time performance is 86 percent.

A word about passenger response to metroliner service:

1. About half of metroliner passengers switched from private auto, plane, or bus used on their latest prior trip.
2. More than 85 percent of metroliner passengers said they expect to use train service again the next time they make a trip on the route.
3. Despite a long-term decline in train travel, there was an increase in noncommuter patronage on the Washington-New York route (including trips between intermediate cities) in 1969, of 7 percent over 1968 for a total of 7,483,000—605,000 on metroliners. On April 20, 1970, the metroliners carried their one-millionth passenger.
4. Metroliners have been especially effective in recapturing longer-haul patronage as evidenced by an increase in 44 percent in the through Washington-New York traffic. Approximately a third of these passengers went by metroliner.

At this point, I do not know when actual contract demonstration service with the Penn Central will begin, but hopefully it will be soon. We have been in continued discussion with the railroad and are considering contract modifications as to frequency of service and ride quality.

In the last extension legislation, you authorized the building of suburban intermodal stations at Lanham, Md., and Woodbridge, N.J. The Lanham Capital Beltway Station has been operating now for more than 2 months and already appears to have justified the public investment, both as a contribution to the relief of highway and air congestion and as an example of bimodal cooperation where buses and trains operate intercity service out of the same facility.

It represents the combined efforts of Federal, State, and county governments. Approximately 80 rail passengers a day board the train at this new station, which is more than we estimated for the early stage of the project based on seven trains which stopped only on weekdays.

Recently, the number of trains stopping was increased to 13, with weekend service as well.

To maximize utilization of the station, we are conducting demonstration feeder bus service to Rockville, Md., via D.C. Transit and to Annapolis via Greyhound. The Greyhound Bus Co. is doing equally as well in providing express bus service from Lanham to New York in less than 4 hours and serving other north-south traffic.

Ground has been broken for the Woodbridge station in New Jersey and it will be in operation before the end of the next fiscal year. It is located off the Garden State Parkway and will serve as a beltway-type station for the New York-Newark metropolitan area.

The prototype turbotrain has been in demonstration service for more than a year now between Boston and New York. The service is operated by Penn Central, utilizing two three-car trainsets built and maintained by the United Aircraft Corp. and leased for a 2-year period by DOT.

With only one roundtrip daily, the demonstration has not been so much a test of public response to service as a test of experimental equipment incorporating significant new design features. The train is providing important economic and technical data and operating cost information which reflect use and replacement of aircraft-type components and preventive maintenance techniques.

From April 8, 1969, through April 30, 1970, turbos, operating one roundtrip daily, with "weekend specials" added in August and September, carried 90,000 passengers.

The average load factor of 65.1 percent is high for a run involving four or five intermediate stops. The average number of passengers per train is 121.

The train has a seating capacity of 144. On-time performance rate is 88 percent.

We have been unable to utilize the full high-speed capacity of the train to achieve the planned reduction in running time to 3 hours and 15 minutes because of the condition of the roadbed and the existence of many highway crossings at grade.

In summary, Mr. Chairman, I can assure you that the Department's interest in high-speed ground research, development, and demonstrations ranges far beyond the 1-year extension in authority and appropriations now before you.

Once we have answered some of the questions we have asked ourselves about the future, we will be better able to advise you on what we believe to be the appropriate role for the high-speed ground program in the full scope of transportation systems research.

I strongly urge your continuing support of the high-speed ground transportation program which has had and will continue to have a significant role in solving the crises of urban and interurban transportation.

Mr. Chairman, that concludes my prepared remarks.

Now we will be pleased to answer any questions the committee may have.

Senator HARTKE. Thank you for a fine statement.

I think that one question we would like to know the answer to is: Can you give us any idea as to what can be done in the immediate future to provide for better service, at least for innercity travel? Do we

have any prospect of anything other than continued research, or do we have any prospect for a real breakthrough?

Mr. WHITMAN. Yes, sir; I am sure we have.

We have learned a great deal from the metroliner, although we have had some trouble with it. We also have learned a great deal from the turbotrains. We find this airplane-type construction is probably going to offer some real advantages and some real economy.

For the down-the-road future I think the tracked air-cushion vehicle will provide the vehicle that you are thinking about to go beyond the 150-mile-an-hour speed which is probably about the limit for rail-wheel types of transportation.

Senator HARTKE. What about the so-called TACV, the tracked air-cushion vehicle; how much reliance are you placing upon the development of that type of vehicle and utilization of it?

Mr. WHITMAN. A great deal, Senator.

Senator HARTKE. Is it the number one designated new mode?

Mr. WHITMAN. At this point of our program, that is right. It is coming along well. We have the technology now to operate at about 150 to 180 miles per hour, and we hope to use the test site to advance us to the stage where I think it will become an eminently successful vehicle in longer intercity distances up to speeds of approximately 300 miles per hour.

Senator HARTKE. Give me a timetable the best you can.

Mr. WHITMAN. The technology is already available for the 150 to 180 mile-per-hour schedule. We don't think we have any problems there. There will be some minor problems, but the technology is available. We will begin building a test site in Pueblo, Colo., this year, and by 1972 we hope to have a prototype in the testing process at Pueblo, and this will be toward obtaining speeds of 300 miles per hour.

Depending on just how successful our R. & D. programs are, I think that within the next 5 years we should have this type of vehicle ready for intercity use where it is deemed feasible.

Senator HARTKE. You are saying that you are going to have the prototype in Pueblo. Can I ask you how long that is going to be?

What is the distance of that experiment?

Mr. WHITMAN. That track you mean?

Senator HARTKE. Yes.

Mr. WHITMAN. Twenty miles.

Senator HARTKE. Where is it going to go from, to?

Mr. WHITMAN. It will be an oval track. There will be two singular tracks around the oval and one straightaway track, one to test the linear electric motor and the second to test the TACV. The straightaway track will be to test at speeds too high for the curves on the oval tracks.

Senator HARTKE. Would it have been possible to place this experiment in an area in which you had a heavy concentration of population so it could have been used while you were experimenting?

Mr. WHITMAN. That would be possible with the 150-mile per hour vehicle and we have been looking at several locales for a pilot project. However the 300-mile-per-hour technology is not far enough advanced to hope that we could develop a prototype in a congested area. We think the proper thing to do is to test advanced speeds—because there are going to be some problems with it. For one, the aerodynamics are

somewhat unknown; for another, answers are needed for the high-speed power pickup problem. I think we can solve all these, but I believe it should be done in the proper testing environment, rather than to put it right in the city.

Senator HARTKE. As I understand what you are saying, it is you expect to develop the prototype by 1972, is that right?

Mr. WHITMAN. Yes, sir.

Mr. MITCHELL. In 1972 we will deliver the 300-mile-per-hour research vehicle to the test site and be ready to start testing, fiscal year 1972.

Senator HARTKE. You are just talking about starting testing in 1972?

Mr. MITCHELL. That's right.

Senator HARTKE. That is a research vehicle that will be developed and you will start to test it in 1972. How long a period of test time do you anticipate will be required?

Mr. MITCHELL. We envision testing that vehicle, say, 4 or 5 years at the test site.

Senator HARTKE. Four or five years?

Mr. MITCHELL. Yes, sir.

Senator HARTKE. Is that 4 or 5 years from 1972?

Mr. MITCHELL. Yes, sir.

Senator HARTKE. That takes up to 1976 or 1977, right?

Mr. MITCHELL. Yes, sir. While we will be doing that, we will be developing the components subsystem of that vehicle, and we can spin off that technology to operational vehicles.

Senator HARTKE. At the same time, don't you have some problems in regard to development of track for the vehicle?

Mr. MITCHELL. As far as the track development is concerned, there are three classic designs of track. We are fortunate that the French have taken one approach, which is the inverted "T," the British have taken another approach, which is the box beam. We have taken the U-shaped channel guideway approach.

Senator HARTKE. Could you hear in the back of the room? I don't know what is wrong with these systems. I hope the prototype works better than our communications system.

Mr. MITCHELL. As far as the U-shaped guideway itself is concerned, we do not feel there is any immediate gain over what we have today by working on the guideway, the construction of it is rather straightforward, it is more the vehicle we have to work with than the guideway.

Senator HARTKE. But you will have to develop the track, and you can do that simultaneously with the development of the prototype and testing?

Mr. MITCHELL. That's right.

Senator HARTKE. With regard to the utilization, it will not require the acquisition of new rights-of-way and the building of those between the cities?

Mr. MITCHELL. We feel that we can since we are elevating these systems in many cases and using existing rights-of-way over railroad track or highway. Therefore we will not have to acquire new rights-of-way in every case.

Senator HARTKE. You can use existing railroad facilities?

Mr. MITCHELL. The rights-of-way.

Senator HARTKE. It is a different type of track.

Mr. MITCHELL. Yes, sir. We will use the air rights over it. All we have to do is to put down footing. It will be elevated to at least 20 feet above it.

Senator HARTKE. Do you have any estimates on how long it would take for the building of those facilities in order to utilize such a vehicle?

Mr. MITCHELL. I believe that a fairly good estimate is something like a quarter of a mile a week.

Senator HARTKE. Let me ask you, can you give me a place where we might start with this and where we might end up with it? We are surely not going to go from Pueblo down to LaMesa Springs, are we? Can you give me an idea of where we might start this?

Mr. MITCHELL. There have been many corridors looked at where we feel this system would apply. Some examples, of course, would be, say, in the Los Angeles area, you could put it in the Midwest, you could put it on the east coast. Any corridor that has sufficient density of travel.

Senator HARTKE. If you are going to use this at speeds of as much as 150 to 180 and ultimately 300 miles an hour, you ought to go at least probably to an area which would have at least a 300-mile distance, should you not? I mean you would have an hour trip.

Mr. MITCHELL. We feel that the TACV is a very viable system in stage lengths of at least 50 miles or greater.

Senator HARTKE. How long, then, would you anticipate it would take to build a 50-mile stretch?

Mr. MITCHELL. With multiple starts up and down the route, you could certainly put in 50 miles within a year.

Senator HARTKE. You realize what you are talking about here—I am using your mathematics and using my computation—building a 50-mile strip and using this vehicle in about the same length of time it took between when President Kennedy said we were going to put a man on the moon and back and we did it?

I am looking at this as a person who is looking at the congestion in travel today. Do you really believe this is the type of response that the American people expect insofar as trying to solve the transportation problem of today? I think the people are giving up on government because of that. They really see no response. Can you give us any hope out of the jungle?

Mr. MITCHELL. I believe I do not quite understand the question, but as far as—

Senator HARTKE. Let me say this to you, this TACV vehicle, we understand we have the others here still going; but this is supposed to be the vehicle of the future, as I understand from Mr. Whitman, and it is my understanding that this is the one upon which the bulk of the money is being utilized in engineering, research, and development.

Now, in the budget estimate for 1971, \$18.3 million is allocated for engineering, research, and development. For the demonstrations, that is the metroliner, the turbotrain, and data collection, which is the biggest one by the way, but for the demonstration metroliner and the

turbotrain, two-tenths of a million, \$200,000 and \$900,000 respectively, and 2.3 for the whole demonstration effort.

In other words, most of the \$21.7 million is for research and development. What I am trying to find out, what I think the American people want to know, the traveling public, is how soon in the near future can we expect any type of breakthrough of substantial proportions which will provide transportation?

Mr. MITCHELL. I feel that within the next 3 years, hopefully within 3 years, we will have a tracked air cushion vehicle capable of 150 miles an hour.

Senator HARTKE. But no one will be riding on it? You will have it, is that right?

Mr. WHITMAN. Could I try to answer this question?

Senator HARTKE. Yes, Mr. Whitman.

Mr. WHITMAN. Our figures show and our technical people tell me, and I have every reason to believe that this is right, that within 3 years we can have a 150-mile-per-hour system available and in operation. Within 5 years we can have a 300-mile system in operation. So far as the guideway is concerned or length of time it takes to build it, it is like a pipeline, if you want to start in five or six different places, you could put in almost any reasonable amount in a year.

If you started from one end and continued only on one end, it would be about a quarter of a mile a week. But given the technology, a good safe operating vehicle, and given the money, there is no reason why in 5 years you could not have a 300 m.p.h. TACV system in operation and extend it each year to the maximum amount of money that we feel we ought to spend on it. This is entirely feasible.

Senator HARTKE. How much mileage would you anticipate in 5 years?

Mr. WHITMAN. I would think that in 5 years we will have developed the higher speed system, and before that 5 years is up we should have determined where we are going to put it. Then, I think we would have to decide what is the program system for building the guideway.

As I say, I think you can build as much guideway as you are willing to commit funding for depending on how fast you wanted to do it. If there was a real rush it had to be done in 1 or 2 years, I would say you could get 300 miles done in that period of time if you so desired.

Senator HARTKE. Do you have any rough estimate as to how much it will cost to build the guideways?

Mr. WHITMAN. Yes, sir. Mr. Ward, would you take that, please, and give us your figures on that?

Mr. WARD. We think that the double-tracked guideway with all its required electrification and elevated type guideway which, of course, is more expensive, can be built for \$2 million a mile.

Senator HARTKE. \$2 million a mile?

Mr. WARD. Yes. I would like to point out that we are really conducting—

Senator HARTKE. Does that include right-of-way?

Mr. WARD. No. That is the construction cost. That is the cost of the footings, short piers, the superstructure, the running surface, but not the electrification that is required.

I would like to emphasize that we are really talking here about two concurrent programs. We are talking about the possibility of imple-

mentation of 150 miles an hour or a little higher commercial passenger carrying system in the next few years and a longer range R. & D. program at the test site in Colorado to increase the speeds to the 300-mile-per-hour range.

In recent months, but we have been looking at the possibility of passenger-carrying demonstrations starting with probably an airport access type of demonstration, where the airport is 40 or 50 miles away and perhaps building it in a couple of stages to get the operational experience.

This is the kind of thing that we think ought to be done first to get the operational experience, get the public reaction. This could be running in 3 years very easily.

Senator HARTKE. For the immediate future, then, you do not hold out much prospect of any real utilization of tracked air cushion vehicle type of approach towards solving our transportation needs. Isn't that true?

Mr. WARD. No, sir.

Senator HARTKE. Why am I wrong in that conclusion?

Mr. WARD. Because I believe within the next 3 years we can have a passenger-carrying operation and once this has been demonstrated we can expand as rapidly as the Interstate highway program was expanded if the need is determined and the funds made available.

Senator HARTKE. The total cost on this compared, for example, to any other type of utilization is higher, is it not?

Mr. WARD. It is higher—

Senator HARTKE. Isn't it true—I don't take issue with nor do I endorse the Northeast Corridor Transportation Project Report, but in their summary in I-25, in which they give the capital expenditure for each non-VTOL alternate, the highest cost of all is the tracked air cushion vehicle type approach, it is substantially higher. I would say as much as five, six, eight times as much, isn't that right?

Mr. WARD. No, sir. If you compare a new right-of-way for a high-speed rail system with a new right-of-way for an air cushion vehicle, it is approximately double.

Senator HARTKE. Double for the air cushion vehicle?

Mr. WARD. Yes. It is at least that. I think that has to be balanced against the additional demand which would be generated. In other words, the Northeast Corridor report also shows that more patronage would be attracted to the system.

Senator HARTKE. Yes, that is true. Let's come to this thing. This is being tested though at the present time in France, is it not?

Mr. WARD. Yes, sir.

Senator HARTKE. And they are operating there, are they not, on an experimental basis?

Mr. WARD. On an experimental basis, right.

Senator HARTKE. Have you made a determination as to the amount of pollutants involved with this instrument?

Mr. WARD. With the linear electric motor there should be essentially no pollution along the right-of-way.

Senator HARTKE. There should be none. What about the one they have over there at the present time?

Mr. WARD. The French are using a turboprop to drive the vehicle. Therefore, there is a low level of pollution from the gas turbine.

Senator HARTKE. How effective is the one in France?

Mr. WARD. Very effective.

Senator HARTKE. It is working?

Mr. WARD. It is working very well, yes, sir.

Senator HARTKE. Is there any necessity for us to duplicate all that effort?

Mr. WARD. Not for the 150-mile-an-hour system, with the exception of instituting a linear electric motor to reduce noise and pollution even further.

Senator HARTKE. Senator Pearson.

Senator PEARSON. Tell me about the Canadian experience.

Mr. WARD. With turbotrains?

Senator PEARSON. Yes. Are they making a pretty substantial contribution to the technology of high-speed rail transportation?

Mr. WARD. After a few weeks the Canadian turbotrain operation was suspended and it is only now starting in again on a very limited basis. So, the only turbotrains which have been operating over the past year are the Boston-New York DOT-Penn Central turbotrains.

Senator PEARSON. Mr. Whitman, I think the thrust of most of the questions propounded by the Chairman comes out of a history of delay, a history, perhaps, of frustration over all the problems and being unable to solve them in transportation up and down the line. In a very general way, what is the slippage in this technology, amount of money, low priority; what can you say for the record about the situation that you walked into in this particular field?

Mr. WHITMAN. As I see it, Senator, the biggest problem was that we probably didn't recognize early enough that transportation was going to become as congested as it has, and we started something from scratch just a few years ago to try to advance the state of art beyond the wheel on rail.

Frankly, as far as the TACV is concerned, I think it has come along pretty well. Working with the French, and we had some input into that, they have developed a TACV to the point where they have 12.7 miles of guideway in operation. I had a ride on it, and it is quite impressive. As Mr. Ward has explained, it does have a turbine engine, and while it is not too noisy, I think it is a little too noisy to go by somebody's apartment house on the hour. I think it would be objectionable. If you had it in the country, I don't think it would make as much noise as a conventional train.

Beyond this, there are some breakthroughs that have to be researched and developed, and we will have to rely a great deal on the availability of a test site to do this. The test site was delayed, as you know. We are about ready to begin construction this summer, and we have great hopes that we can make this a successful R. & D. project. We have all the paperwork done and, I think, all the studies that we need to make.

What we need now is the hardware and a place to test it. Frankly, I think our only problem has been that we didn't start early enough. As Senator Hartke mentioned, we should be farther along, and he is absolutely right. But it is not the kind of thing that you can do in a year or 2 years. It is a lot of work; it is quite a breakthrough.

Senator PEARSON. In the third report, pursuant to the High-Speed Transportation Act of 1965, it indicated in a most precise way that they plan expenditures that amount up to about \$42.4 million over a

2-year period for the projects Washington-New York, New York-Boston, and as I understand it, neither of these projects is now under-way, is that right?

Mr. WHITMAN. You mean the metroliner and the turbotrain?

Senator PEARSON. Yes.

Mr. WHITMAN. They are both running. But we have not yet formalized a demonstration program with the Penn Central for the Washington-New York test.

Senator PEARSON. They haven't been paid any money out for this anticipated expenditure, have they?

Mr. WHITMAN. Yes, they have been. For the New York-Washington project I believe they have received \$3,329,730.82. But additional money \$7,870,420.18 will accrue to them as the demonstrations get started.

Senator PEARSON. In this authorization which is \$21.7, and I see only \$200,000 scheduled for application to the metroliner Washington-New York demonstration project and \$900,000 for the turbotrain Boston-New York demonstration.

Now, this \$200,000 and this \$900,000—are these in addition to the \$21.7 million that I just made reference to?

Mr. WHITMAN. I think I may have misled you. The turbotrain demonstration between Boston and New York has been in operation, and that \$900,000 was for completion of the 2-year project. We rent the equipment from United Aircraft and pay some of the maintenance for it. That has been going along.

We have some hope to extend this. We think, given the funding, we would like to suggest building a couple more cars so that we could test passenger reaction, because with only three cars per train now, we can leave New York and Boston full, and after they make four or five stops, we get down to around 65-percent capacity. I think if we had two additional cars we could also fill these up. I think there is a little more to be done there.

Senator PEARSON. What is the interrelationship of these projects and the legislation that was just passed in the Senate setting up a quasi-public passenger service corporation? Do we intend to transfer any of these projects over to that corporation for management?

Mr. WHITMAN. Maybe I could answer it this way, it should be emphasized that the high-speed ground program has its own particular function, that of high-speed research and development of new high-speed systems and this includes all ground-related modes and technology.

At the same time, we see real value in a program with the special expertise that the Office of High-Speed Ground Transportation has to aid the new rail corporation in coming up with new and innovative ideas and also help them get started, such things as hardware R. & D.—

Senator PEARSON. So, you don't plan to transfer it over to the corporation?

Mr. WHITMAN. Just what the contract will be between the corporation and the railroad, I can't tell you, because that is not that far along. But I would expect that we could continue in OHSGT to funnel information to them, do the R. & D. that I doubt that they would be able to do, and continue about the same as we would in relation, say,

now to the Penn Central after the new corporation takes over the passenger business.

Senator PEARSON. Thank you, Mr. Chairman.

Senator HARTKE. On the tracked air cushion vehicle project, isn't it scheduled for Los Angeles, isn't there one scheduled to be used there to the airport, isn't that correct?

Mr. WHITMAN. They have been looking at Los Angeles as a possible place for a pilot project, yes, sir.

Senator HARTKE. Isn't the money that is being expended on that coming out of HUD?

Mr. WHITMAN. Not to my knowledge. I think that is UMTA funding, but I am not familiar enough with their funding program to be able to talk on this subject.

Senator HARTKE. This is a program, is it not, for urban mass transportation?

Mr. WHITMAN. To the extent that it would be within the city, it would be urban mass transportation.

Senator HARTKE. But wasn't that originally intended to go to busses or things of that sort? Isn't this sort of a diversion of money? Shouldn't this really be part of the expense of the High-Speed Transportation Office?

Mr. WHITMAN. I can't answer that, Senator. I am not familiar with the UMTA funding.

Senator HARTKE. Let's go back to the metroliner. As Senator Pearson said, there is \$200,000 for the metroliner, \$900,000 for the turbo-train, but if the contract is completed and the demonstration projects begin, how much more money would Penn Central get?

Mr. WHITMAN. Let me direct this to Mr. Smith.

Senator HARTKE. After all, the demonstration project really hasn't officially started, isn't that correct?

Mr. WHITMAN. That is correct.

Senator HARTKE. That is partly because they have not put enough trains on.

Mr. WHITMAN. We have had trouble with the equipment. The original contract contemplated nine round trips between here and New York and several trips, Philadelphia to New York, but the equipment has not been capable of sustained use to the point where we are only running six, and we are working with Penn Central, and you mentioned in your opening statement you would hope that we could give you some kind of a clue when we are going to get started, and I hope we can get started early this fall.

Senator HARTKE. We were supposed to have started in October 1967?

Mr. WHITMAN. Yes, I believe it was. That was before my time, but I understand that was the target date.

Senator HARTKE. Let's get those figures, that is, the amount of money that would go to Penn Central in the event that it does start this fall.

Mr. SMITH. The contract was signed and money was obligated for the entire demonstration, that is the amount of money to be paid to the railroad, actual expenditures, depend upon the various steps in the sequence in the contract.

So far the railroad has ordered the cars and the cars have been built. The railroad has received under the contract, \$2 million for that.

There have been other expenditures in connection with the suburban stations and with some track changes and so on, in Trenton, N.J., some other smaller expenses that were mentioned, such as the speed ramp in Baltimore, and the total expenditures now are in the neighborhood of \$3.3 million. The obligations, the total obligations for the demonstration are about \$11.2 million.

Senator HARTKE. How much?

Mr. SMITH. About \$11.2 million. When the test period of the demonstration starts, then, there will be other payments made to the railroad.

Senator HARTKE. Approximately how much?

Mr. SMITH. Over the period of the demonstration, the balance of the 11.2 million. That money has already been obligated.

Senator HARTKE. In other words, the total obligation is 11.2 million?

Mr. SMITH. Yes, sir.

Senator HARTKE. Now, the problem, as I understand it, is that the original nine weekday roundtrips between New York and Washington have never been put into effect.

I understand also there is at the present time an intention to reduce the contract to require only seven trips, is that correct?

Mr. WHITMAN. We are trying to come up with a figure that can be met by Penn Central without downgrading their service. They are having trouble with the cars. We would like to run nine. They have some problems with this, and we have tentatively tried to work out the possibility of running with seven.

Senator HARTKE. They are running six at the present time?

Mr. WHITMAN. Yes, sir.

Senator HARTKE. You are going to go to seven?

Mr. WHITMAN. Yes, sir.

Senator HARTKE. How much more benefit do you really receive for that one additional roundtrip for the expenditure of money that would be involved on the part of the Federal Government?

Mr. WHITMAN. The demonstration contemplated a train every hour during the day, during the working hours, and we would have liked to have been able to accomplish this.

We think that we can get more data with seven than we can with six, but I suppose if they were to come out flat and say they could only run six we would have to give that consideration. But they believe they can handle seven.

We would like to start with seven, and I kind of feel this is where we are going to come out.

Senator HARTKE. But that would be a substantial increase in the amount of money which would go to Penn Central as a result of adding one additional roundtrip a day, isn't that correct?

Mr. WHITMAN. No, I don't think so.

Senator HARTKE. They are getting now at the rate of \$3 million to \$7 million, isn't that correct—you are talking about another additional \$7 million?

Mr. WHITMAN. The balance of the \$12 million minus any subtraction that might be made for the lower service if that was determined to be necessary. It would be approximately \$12 million total.

Senator HARTKE. Can you tell us if you have a definite plan for obtaining information from this demonstration? For example, are

there plans for varying fares to study results? What about changing schedules?

Mr. WHITMAN. Yes, sir, we have quite a number of experiments that we will work on. Although the contract calls for experiments in frequency, fares, and other operationing conditions, there are two major areas to be developed: One is automated reservations and ticketing and the other one is maintenance and reliability. The real demand for the metroliners has not been revealed because of the difficulties of the public in getting tickets.

Baggage handling is another area in which we think a great deal of experimentation can be accomplished. We have a service in Baltimore where the passenger, with his baggage in a cart, gets on a specially designed escalator and moves up to the street level and the station level.

There also is the matter of coach attendants. We want to find out how many of these people we actually need. With a proper type of car that can be cleaned easily on short runs, we may not need quite the complement needed in the past.

Smoking is another item—whether you have smoking in one car or whether you will be able to smoke in all the cars. And one of the more interesting things is the suburban park-and-ride stations and parking arrangements which we have demonstrated at Lanham and will in New Jersey by the end of the year.

We also want to experiment with fares. What service do you have to give for a certain fare level? Should there be first and second class or just simply one fare? This type of thing.

Coach seating is another area of experimentation that we will check to see just what is the proper number of seats that a coach can accommodate. Should they swing around so people do not have to ride backward as you do in an airplane where you are always facing forward.

Senator PEARSON. Don't we know those things, Mr. Whitman?

Mr. WHITMAN. No, we have never tried them out on trains.

Senator PEARSON. The railroads have never conducted studies in these particular fields?

Mr. WHITMAN. They have, but on these new cars we think we have a chance here to finally sit down and find out what should we have in the "ideal" coach.

Senator PEARSON. I am not being critical. I am just a little appalled in that these are sort of basic facts that I would think any transportation system would be addressing themselves to constantly as a matter of now—

Mr. WHITMAN. I don't think there has been too much R. & D. done in the railroad passenger business in the last 2 years, and we think it has to be brought up to date.

Senator PEARSON. Or the last 20 years.

Mr. WHITMAN. But there are a number of things that we will try out. Some of them may seem a little bit trite when you talk about them, but they are simply things we don't have the answer to and we think we ought to get them.

Senator HARTKE. In line with what Senator Pearson said, the former Director of the Office of High-Speed Ground Transportation said: "We needed no more experimentation; we do know that in

highly populated corridors people will use high-speed trains if it does provide for attractive, fast, and reasonably reliable service, and what we need now is to get it moving." Isn't that about right?

Mr. WHITMAN. Yes, sir. I feel just as strong as you do. This is something I have worked on awfully hard since I have been in the Federal Government. But it seems once you get something set for the metroliner program, something else happens. I hope by this fall I can come up and look you in the eye and tell you it has happened.

Senator HARTKE. I hope so, too.

One part that disturbs me quite a bit is safety. We have passed in the Senate a railroad safety bill. It has not passed the House. It is the first comprehensive railroad safety bill that has been passed in the history of railroading.

There was an accident in June of 1969 on the trains which were used by the Penn Central at Glenn Dale, and it did not involve the metroliner, but it raises some very important questions.

In the first place, the contract between the Penn Central and DOT does not provide for the establishment of safety standards for metroliner operation; isn't that correct?

Mr. WHITMAN. I think the existing statutes that are now in our new safety bill cover this, Senator.

Senator HARTKE. But it has not passed in the House.

Mr. WHITMAN. But we already have statutes that relate to the safety of the metroliner.

Senator HARTKE. I am saying that the contract itself does not contain any provisions for the enforcement of safety standards, isn't that correct?

Mr. WHITMAN. I am not that familiar with it, but I presume this is right, because I think that the existing statutes would be the only ones in effect.

Senator HARTKE. You know the National Transportation Safety Board has been very critical of this situation. You know I wrote Secretary Volpe—a letter earlier this year on this same matter.

The question is if you are going to renegotiate this contract, do you intend to include the authority to deal with the question of safety?

Mr. WHITMAN. Yes, sir. We certainly do. We have been working with Penn Central on track to make as sure as humanly possible that this track is in a safe condition, and I am satisfied that the track is safe. I have no problem with this.

They have given us a list of work that they would accomplish, and I think I sent that to you. This work has all been accomplished. I went a little further and said I am not satisfied entirely because we have done this, and that is the end of it. What are we going to do in the next 2 years or in the period of the demonstration? I am satisfied at least that the track is going to be maintained at a safe level, and they gave me their 2-year work program which for the amount of track involved is quite extensive, and I am satisfied with it.

Senator HARTKE. What I think you need, though, is not just ad hoc decisions, but what you need are really definite standards to go by. Let me read to you some of the things which were developed from the National Transportation Safety Board public hearings on the Glenn Dale, Md., accident.

The sworn testimony showed that the defective track and roadbed met all comfort standards under the contract.

At the time of the accident the train was operating 16 m.p.h. under authorized speed.

That the engineer, fireman, and conductor (in the third car) felt and observed no violation of comfort standards when they passed over the defective section of track that caused the derailment.

That the track superintendent who is responsible for track safety was not aware of the boring under the defective section of track.

That the boring was supposed to be 5 feet below the surface—yet in fact a part-time inspector saw a defective bore that surfaced between the rails and did not report a contract violation or a potential safety hazard.

That the deviation in rail straightness was “OK’d” several days before the accident by OHSGT as, being within 1/16 inch from maximum in the area that the track gave way causing the wreck.

That the tamping was inadequate and the tie and ballast below Penn standards in the area of derailment.

And, finally, that none of these conditions was a breach of the high speed contract.

Why can't the permissive words of the Penn standards be deleted and these standards put in the contract as suggested by NTSB? (Oct. 21, 1969, letter, p. 3.)

What I am suggesting is why can't the permissive words of the Penn Central standards be deleted and these standards be put into the contract as suggested by the National Transportation Safety Board. Would you do that?

Mr. WHITMAN. I don't quite go along with that statement that we have had standards that have not been lived up to.

Senator HARTKE. What I reported there was the summary conditions from the National Transportation Safety Board. This was their conclusion.

Mr. WHITMAN. Mr. Ward, do you have any knowledge of this?

Mr. WARD. Yes. I think we ought to point out a couple of facts in addition to what the National Transportation Safety Board concluded.

One is that the kink which was observed in the track did not meet the comfort standards as typified in the track geometry standards in the contract. They were set for comfort with the knowledge that they are a conservative safety standard.

Senator HARTKE. I would hope you would look at that again if you are going to make any modification of this contract that you would actually set down the standard whereby the contract itself would be specific on this point.

I do believe that safety is an important factor in regard to what you are doing here. If you are going to have modification of this contract, which seems to be apparent to me that you are, then, I would think that such a modification would be within the perfect scope of what they should be interested in and you should be interested in, too, and that is the safety of the passengers and their crews.

The Department of Transportation, on May 21, announced the awarding of a contract to study wheel-rail dynamics. Can somebody give us the significance of this research and whether or not there have been any failures on the metroliner wheels?

Mr. WARD. The significance of the research is that although over the past years the railroads, the wheel manufacturers, the steel companies,

have done R. & D. and testing, the basic phenomenon of the interaction between the wheel and the rail is still not completely understood. It is certainly not understood if we want to go above 150 miles an hour.

One of the purposes of this laboratory is to attempt to determine the upper speed limit for steel wheels and steel rails. The upper safe speed limit. Therefore, tests can be run under simulated operating conditions of speed, vibration, track curvature, that will allow us to do tests which might be hazardous out on the railroad.

We can also do tests at lower speeds to improve the performance of the wheels in the sense of reliability, in the sense of ability to absorb heat from braking, which has always been a major problem. This has been a problem in the history of the railroads, the heat of the braking causing cracking of the wheels.

Senator HARTKE. Have you had any trouble with the metroliners on that?

Mr. WARD. Only to the extent that there are some heat cracks, which were caught by inspection at an early stage.

Senator HARTKE. Reports have reached the committee that the metroliner cars have become uncoupled at high speeds. Is this true?

Mr. WARD. Yes, sir. The electrical circuits malfunctioned and the cars did uncouple. Of course, the emergency braking went into effect, this is a situation which is anticipated in the safety design of the electrical circuits.

Senator HARTKE. Has that situation been corrected?

Mr. WARD. Yes.

Senator HARTKE. Are there any restrictions at the present time as to movement of people between cars while the cars are in motion?

Mr. WARD. Not to my knowledge.

Mr. SMITH. Going out of the Washington station, for example, there is a possibility of switching over to another track, making very sharp turns at slow speeds, so they don't allow people to go between cars during that particular movement. It has nothing whatsoever to do with speed. It is just going over the switches.

Senator HARTKE. There are restrictions, then?

Mr. SMITH. Just in that one case.

Senator HARTKE. Is there any danger of a person walking out through there and all of a sudden—

Mr. SMITH. Not the train coming apart, no, sir.

Senator HARTKE. That would be rather sad, you know, if you were out there in the middle and all of a sudden you found yourself down in the tracks.

Mr. SMITH. That would be sad.

Senator HARTKE. There is no danger of that?

Mr. SMITH. There is no danger of that, no, sir.

Senator HARTKE. Do you have any procedures which are utilized at the present time to determine track conditions? In other words, is there a regular testing routine, and do you have any information along this line that would be helpful to us?

Mr. WARD. Yes. We have a track measuring car which measures the geometry of the two rails and records it on magnetic tape. This is the most advanced track measuring car in the country. The runs are made and the information is provided to the Penn Central track engineers.

Senator HARTKE. Is there a followup on any defects then?

Mr. WARD. Yes, sir. The Penn Central engineers use this to plan their maintenance and to make the corrections where needed.

Senator HARTKE. Do you receive reports of those situations?

Mr. WARD. Yes.

Senator HARTKE. In other words, if there is a defect found, do they notify you when it is corrected?

Mr. WARD. Not defect by defect, no, sir.

Senator HARTKE. Don't you think that would be rather helpful?

Mr. WARD. The correction of many of these defects is made before they reach a stage of danger. That is the whole point in the inspection, to correct these long before they get to the danger stage, and the normal maintenance of any track, anywhere in the world, requires continuous maintenance and continuous correction of these incipient defects, which is one way to put it. No, I don't think we should know every one of these.

Senator HARTKE. I have been out there, and some of the known defects are not knowingly corrected as they should be knowingly corrected. I think if you have got a report of those defects as they were found and then if you had a report as to when they were corrected, it would be at least an encouraging factor.

Mr. WHITMAN. We will take a look at that.

Senator HARTKE. On March 13, 1969, in a letter the National Transportation Safety Board wrote to the Secretary recommending that certain action be taken to establish a systems safety mechanism in any high-speed ground research and development project.

Can you tell us what has been done along that line?

Mr. WARD. Yes.

The first high speed ground R. & D. project to reach the hardware stage, that is, the vehicle stage, is, as we mentioned, the tracked air cushion research vehicle to be tested at Pueblo. In that contract with the Grumman Corp., there is a requirement for a system safety plan and system safety engineering. Yesterday at the Grumman plant I reviewed that plan and it is being followed. Guidelines have been established for each of the engineering groups to use in their designs so that safety is considered from the beginning of the design.

Senator HARTKE. The Safety Board recommended an independent safety review committee external in composition to FRA. Has that been done or is it going to be done?

Mr. WHITMAN. We advocated such a committee in the safety bill. I don't think it is in the present bill, but we recommend it.

Senator HARTKE. In the Office of High-Speed Ground Transportation, has it been done?

Mr. WARD. No.

Senator HARTKE. Do you anticipate it will be done?

Mr. WHITMAN. We have recommended that rather than selecting one office within the department for an outside safety review committee that the Department of Transportation consider whether this is needed as a standard operating practice throughout the department rather than picking out one of the smallest offices.

Senator HARTKE. Do you anticipate such a procedure will be followed throughout the department?

Mr. WHITMAN. I don't know.

Senator HARTKE. Would you recommend it?

Mr. WARD. Yes, I would.

Mr. WHITMAN. On a departmental basis, I think we should have this, not just for trains but for all.

Senator HARTKE. The Penn Central claims to have spent \$52 million in connection with the metroliner demonstration. Does the Department of Transportation agree with that?

Mr. WHITMAN. We think it is high. I don't think there is any doubt but what the Penn Central has spent this much money, don't misunderstand me. What we are in doubt about is to how much of this would have been spent had there been no metroliner.

Senator HARTKE. What happened here in 1965 was that before the Senate and House Committees on Commerce, President Stuart Saunders indicated that over the previous 4 years the Penn Central had spent \$25½ million on track, roadbed, bridges, and catenary system, and then in July 1969 they indicated they had spent \$31.6 million on track and roadway. In other words, part of that would have been spent probably anyway?

Mr. WHITMAN. Yes, sir; and which part we are not sure. This is where we differ with them.

Senator HARTKE. What is the present status of the auto-train demonstration? Do you know?

Mr. WHITMAN. Yes, there are two companies that are very interested and one is at the stage of trying to fund it at the present time. We thought one looked very good, but we haven't heard from them lately.

We made available to them all of our technology, all our data, and all our studies, so that they have now available to them everything that we know about.

Senator HARTKE. The Department of Transportation does have some money which has been appropriated but the Appropriations Committee has authorized using the money for high-speed test sites, is that correct?

Mr. WHITMAN. Yes, sir.

Senator HARTKE. In regard to the northeast corridor, Secretary Volpe stated in his letter of transmittal accompanying the northeast corridor transportation report that the corridor group had been transferred to the Office of the Assistant Secretary for Policy and Internal Affairs. It has been asserted that one of the reasons this team was successful in the past was that it was project oriented, and now that orientation is being lost, isn't that correct?

Mr. WHITMAN. The Office of High-Speed Ground did have the responsibility in their shop of developing the northeast corridor report. The primary report has been completed, and it is an intermodal report, and as it now has some implications for other modes rather than rail, high-speed rail, it has been put in the Office of Policy so it will be more readily available to the other modal people that will have use for it.

This is not just a railroad report, as you know.

Senator HARTKE. Do you think there is an advantage in transferring this to an assistant secretary?

Mr. WHITMAN. Well, we felt as long as the other modes were going to have need for it, it probably should be transferred as long as the

initial report had been completed. That does not mean to say that it is finished by any means. It is the type of thing that will continually have to be updated.

Senator HARTKE. Do you think that the report itself and the recommendations made in there will apply to other parts of the country?

Mr. WHITMAN. Yes, sir, we do. I think the biggest thing that will apply is the model that they develop for developing the information that can be extrapolated to other parts of the country.

Senator HARTKE. On pages S-7 and 38, the report discusses the problems of coordination, which as far as I am concerned are the most important problems in all transportation development.

Do you have a plan to recommend as a remedy to this problem, maybe a public corporation or a regional commission with money?

Mr. WHITMAN. Other than the Rail Passenger Corporation bill which you introduced, I don't have anything further than that. Was this your question? I am not sure I quite understand.

Senator HARTKE. What I am really trying to find out is whether a regional commission in the planning stage could really implement it. If we had a public corporation or regional funds for development, would that be of help?

Mr. WHITMAN. I presume it might be. I am rather a little reluctant to say on a regional basis, because transportation does not follow regions quite as closely as I think people think about them. I am a little bit worried about getting into regions. I think a national corporation such as has been advanced is more practical.

Senator HARTKE. Do you have any questions, Senator Pearson?

Senator PEARSON. I only want to ask two questions in behalf of Senator Case, who has a very deep and long interest technically in the northeast corridor, Mr. Whitman.

The first of two Senator Case inquiries is: Whether or not he is correct in understanding that the Federal Railway Administration, the Department of Transportation, would like to secure additional funds perhaps up to \$5 million to be used in overcoming the electronic and mechanical problems which have plagued the metroliner cars and which the chairman made reference to.

Mr. WHITMAN. If these funds were authorized and if appropriated for carrying out modification work on the metroliner, we would certainly use them. This is one of the problems we are having now.

Senator PEARSON. And that request is being made?

Mr. WHITMAN. Not to my knowledge. We are working with the Penn Central to try to see how we can fund overcoming the electrical and mechanical problems that we have, and we are running into a problem of funding.

Senator PEARSON. The second question is: If such funds are authorized and appropriated for carrying forth such modifications on the metroliner, would the Department of Transportation put them to use?

Mr. WHITMAN. We would. Yes, sir.

Senator PEARSON. I thank you, Mr. Chairman.

Senator HARTKE. Thank you, Mr. Whitman, and the members of your staff, for coming today.

The next witness is Robert W. Minor, senior vice president, Legal and Public Affairs, from the Penn Central Transportation Co.

**STATEMENT OF ROBERT W. MINOR, SENIOR VICE PRESIDENT—LEGAL AND PUBLIC AFFAIRS, PENN CENTRAL TRANSPORTATION CO., PHILADELPHIA, PA.; ACCOMPANIED BY JAMES W. DIFFENDERFER, ASSISTANT VICE PRESIDENT, SPECIAL SERVICES FOR PENN CENTRAL**

Mr. MINOR. Good morning Mr. Chairman, I have with me Mr. James W. Diffenderfer who is assistant vice president, special services for Penn Central, who assisted in preparing these remarks. The statement is Mr. Saunders' statement, and I would like to present it for him.

Mr. Chairman and Senator Pearson:

I am grateful for this opportunity to appear before you in support of Senate bill 3730, which extends the high-speed ground transportation program of the Department of Transportation.

Five years ago I testified before this subcommittee in support of the High-Speed Ground Transportation Act of 1965. I stated that the act would provide an opportunity to develop a new kind of rail passenger service to determine whether it could contribute significantly to solving the transportation problems of the densely populated Northeast Corridor by giving the public an attractive alternative to air and highway travel.

The then Pennsylvania Railroad shared the conviction of this subcommittee that railroad passenger service, with its potential for transporting large numbers of people safely, comfortably, and efficiently, would become more and more essential to the Eastern megalopolis as air and motor vehicle traffic congestion increased. We made our own studies of the problem and announced on June 16, 1965, that our railroad was prepared "to invest as much as the Federal Government planned to spend" on a project to demonstrate high-speed rail service between New York and Washington.

Neither our enthusiasm for this project nor our cooperation with the Department of Transportation has waned, despite the many unforeseen difficulties that we have encountered in trying to carry out the project that was authorized in this legislation.

To date, Penn Central has made a much heavier commitment of resources, talent, and money than was originally contemplated. Our railroad has committed more than \$67 million to the metroliner project, compared with only \$12.4 million by the Federal Government. So far, we have been reimbursed only about \$5 million by the Department of Transportation, and payment of the remainder awaits carrying out of the demonstration program.

The bulk of Penn Central's investment in the project has gone into installing new catenary wire, laying welded rail, upgrading the roadbed, and constructing high-level platforms at our stations in Washington, Baltimore, and Wilmington. We have cooperated with DOT in installing computerized ticketing and reservation machines, improving our telephone information service, and making other innovations.

What was envisioned as a feasibility test of market development has become also a product research and development project—to introduce a new kind of train much more technically advanced than conventional passenger equipment. The magnitude of the technical and mechanical problems involved was not anticipated when, on April 15, 1966—more

than 4 years ago—we signed a contract to conduct the 2-year demonstration.

Everyone concerned with this program underestimated its difficulty and complexity. The metroliner project is proceeding on a “learn as we go” course. Long before the full complement of 50 metroliner cars was completed, it became apparent that we would not be able to introduce the service at anywhere near the level specified in the contract because of unreliability of the equipment. These highly sophisticated vehicles have never yet met all the requirements for performance and dependability of service. Each car is undergoing a time consuming and expensive process of “debugging” through in-service correction of defects. Technical representatives of the manufacturers and subcontractors are working closely with Penn Central to ferret out the troubles and remedy them.

Most of the delay in proceeding with the demonstration program has occurred in connection with the car fleet. By comparison, we have had little trouble with the roadway and other facilities.

The contract, which was drawn up in late 1965 and early 1966, did not provide time for building and testing prototype cars before manufacturing the entire metroliner fleet. At the outset, our railroad advocated starting with an eight-car train and testing it in revenue service to determine specifications for a future fleet. But the Government’s desire for more immediate action precluded this approach. As a consequence, we have today 50 prototype cars, each of which has its own peculiarities as well as common defects.

Penn Central sought to overcome this situation by starting metroliner service at its own expense on a limited basis, increasing the level of service as more cars became available through extensive testing and modification. We began with a daily round trip on January 16, 1969, on a schedule of 2 hours and 59 minutes between New York and Washington. We added a second round trip in February, and on April 2, 1969, we increased service to three round trips a day and introduced a nonstop round trip on a 2½-hour schedule. On October 26, 1969, we stepped up this service to 12 trains a day—six round trips—and are maintaining that level now.

So far, we have not operated more than six round trips a day because we cannot keep enough cars in operating condition. Technical problems and failure of mechanical components have kept 30 to 40 percent of the metroliner fleet out of service virtually all the time.

Although passengers seldom are aware that it is happening, and safety is not affected, one or two cars sometimes experience operating difficulties during a trip, and standby cars have to be substituted after the train reaches Washington or New York. For this reason, a number of cars must be kept on a standby status while others are shopped for modifications or maintenance and repair. This narrows the margin of equipment available for increasing the frequency of service.

We would like very much to increase service but we do not want to jeopardize the quality of service by putting on more trains than can be kept in dependable operation. To do so would undermine public confidence in reliability of our schedules, and would destroy the market we are trying to create.

Yet, despite these handicaps, the metroliners have won high public acceptance in their 16 months of limited service. They have clearly

demonstrated their ability to win travelers back to the rails. We have carried 1,200,000 passengers, each averaging a trip of more than 150 miles.

The occupancy rate is exceptionally high. It is averaging two-thirds of available seat miles. We have managed to compile an impressive record for on-time performance, even with the handicaps which I have described. In April, the on-time performance was 88.4 percent on arrivals within 10 minutes of scheduled time, and 85.6 percent in March. The service has operated since its inception at an on-time average of approximately 83 percent. This compares favorably with the best 1969 on-time record of the airline industry, which was 72.6 percent of flights arriving within 15 minutes of scheduled time.

Our initial success is encouraging, but the overall economics of the project have not yet been tested and measured accurately. This cannot be done until the demonstration project is carried out. In light of the experience we have gained in our independent operations of the metroliners and the data which the Office of High-Speed Ground Transportation itself has accumulated, we are seeking to revise the demonstration contract on a more realistic basis.

Penn Central is most eager to conduct the project authorized in the High-Speed Ground Transportation Act. We respectfully urge that the act be extended so that this mission may be accomplished. It would be impractical to let this project lapse before the hypotheses of the experiment have been put to a thorough test.

We are diligently working out the defects and modifying the equipment in order to achieve satisfactory standards for performance and reliability. We believe that in time we will be able to do so.

Obviously, a continuing commitment to research and development of improved high-speed railroad equipment is necessary. We have no quarrel with projects authorized in the act not directly related to rail technology and regard them as essential in the interest of sophisticated requirements of the distant future. But we are convinced that the potential for more immediate development of swift, safe, attractive, and economical transportation based on the principle of flanged wheels over steel rails has hardly begun to be reached.

Both the metroliner project and the turbotrain operation between New York and Boston are only a start in this direction. Together, these two types of innovative rail service comprise the first major commitment to rail passenger technology made in this century by the Federal Government. Yet they involve appropriations which are infinitesimal compared to the billions of dollars lavished on highways, airways, and waterways.

They are a first step which must be continued and should be more adequately funded not only for the benefit of the northeast corridor, but for the future of intercity transportation throughout the Nation. Since the act was passed in 1965, there has been a growing recognition of the importance of rail transportation as a part of a balanced transportation system in highly populated areas, and it is most important that these programs be followed through without disruption.

Extension of these northeast corridor projects are needed to obtain the full benefit of the expenditures already made. As I pointed out earlier, both of these are product development as well as market devel-

opment programs. The basic difficulties that have plagued the metro-liners and turbotrains so far have been identified. The act should be extended to provide time and funds for refining and perfecting the equipment so that the marketing aspects may be better investigated.

The metroliner demonstration project, as you know, is designed to measure and evaluate such factors as public response to new equipment, higher speeds, variation in fares, improved comfort and convenience, and more frequent service. Most of these questions remain to be answered, and this data is vitally essential to the long-range planning of the Department of Transportation. Already the railroad has spent more money to initiate metroliner service than it ever contemplated, and this is likewise true of the car builders and the major suppliers.

With appropriate funds devoted to research and development of metroliner technology, under the directions of the Department of Transportation, reliability of the equipment can be greatly improved and frequency of service substantially increased. The same is possible for the turbotrains. The progress made so far should accelerate as these projects are continued.

The critical situation in railroad passenger service today adds emphasis to the need for federally assisted development of medium-distance trains which will meet the demands of the traveling public. This need can be met in some measure by extension of the High-Speed Ground Transportation Act of 1965.

Senator HARTKE. Thank you very much, sir.

The metroliner, as you said, has enjoyed a load factor of 67 percent; is that correct?

Mr. MINOR. Yes, sir.

Senator HARTKE. And travel between Washington and New York has increased by 55 percent through 1969?

Mr. MINOR. That is correct.

Senator HARTKE. Is the Penn Central realizing a profit from the operation of the metroliner?

Mr. MINOR. Not on a full cost basis; no, sir. We are meeting our direct operating costs, but the initial investment made by Penn Central of some \$67 million, we are not getting any return on that at all.

Senator HARTKE. What would you consider a return necessary on that investment?

Mr. MINOR. You mean a percentage return?

Senator HARTKE. Yes. In other words, to realize a profit, what type of return would you need?

Mr. MINOR. To meet the cost of money today, you have got to have better than a 9 percent return.

Senator HARTKE. You had a revenue increase in 1969, passenger revenue, by \$42 million over 1968?

Mr. MINOR. That figure, the 1969 figure over 1968, includes New Haven passenger revenues which were not included in the 1968 figures.

Senator HARTKE. Can you tell us how much of that increase was attributed to the metroliner?

Mr. MINOR. I can get that figure and supply it for the record.

(The information was subsequently received for the record.)

Revenues for 1969 in that service showed an increase of \$7,105,298 over those for 1968. Metroliner revenues in 1969 amounted to \$6,798,054.

Senator HARTKE. What, in your opinion, is the principal reason that the demonstration project has not gotten underway?

Mr. MINOR. Equipment. The equipment is unreliable at the present time. We run as much as 40 percent out of service on any given day.

Senator HARTKE. Is this due to maintenance of the equipment, or faulty construction, or faulty design?

Mr. MINOR. It is a matter of design. We are attempting to get a project underway with the Department of Transportation now, to take some of these cars out of service and redesign them to get the bugs out.

Senator HARTKE. I would think that all of us would agree that the response to the metroliner has been rather amazing in the number of people that have used it, but at the same time isn't it true that you have to make your reservation between 9 o'clock in the morning and 5 o'clock in the evening?

Mr. MINOR. You have got to reserve in advance, Senator.

Senator HARTKE. I know, but are there facilities all night long? If I wanted to call, say, at 9 o'clock at night, could I get a reservation?

Mr. MINOR. No, I am told that the reservation service is between 9 and 5 o'clock.

Senator HARTKE. If you wanted to go on an airline, you could make your reservation 24 hours a day, right?

Mr. MINOR. I understand you can, yes, sir.

Senator HARTKE. The easy question is, I don't know what the easy answer is, but the easy question is why?

Mr. MINOR. The easy answer is we cannot afford it, Senator.

Senator HARTKE. But the airlines can?

Mr. MINOR. They do.

Senator HARTKE. You don't think that would be helpful to put on an around-the-clock reservation service?

Mr. MINOR. I don't believe, Senator, that it would materially increase the patronage on the metroliner, no, sir.

Senator HARTKE. You use a computer, right?

Mr. MINOR. Yes, sir.

Senator HARTKE. Do you still have any occasion when the computer says you have a full train and you don't have? Are you having that trouble yet?

Mr. MINOR. We have had some trouble with that, but primarily that is due to no shows, Senator; the same problem the airlines have. As you know, the airlines engage in a practice of deliberate overselling in order to compensate for the no shows.

Senator HARTKE. Do you spend any money on advertising the metroliner?

Mr. MINOR. Yes, sir.

Senator HARTKE. How much?

Mr. MINOR. I will have to supply that figure. I don't have it before me, but we have conducted advertising.

(The information was subsequently received for the record:)

For the years 1967 through 1969, Penn Central spent a total of \$668,882 in advertising the Metroliners.

Senator HARTKE. Do you have any arrangements with travel agents?

Mr. MINOR. I do not believe we do, no, sir. I don't think we do.

Senator HARTKE. These are some of the things that airlines use that you don't, right?

Mr. MINOR. That is correct, sir. We have had no problem with filling metroliners to date. Perhaps if our patronage begins to fall off, we would want to investigate working out arrangements with travel agents.

Senator HARTKE. In other words, you are content to ride? All right.

You have mentioned you have \$126 million nonrecurring loss on longhaul passenger facilities. Were the facilities actually worth that much?

Mr. MINOR. That was the book value. They were carried on our books at that amount. We obviously did not think they were and wrote them off because they showed no potential for income whatsoever.

Senator HARTKE. Coming to the metroliners on technology, it has been reported to this committee that they do not ride as well as they should because of their heavy trucks. Would you comment on that?

Mr. MINOR. Yes, sir. That has been a matter of continuing discussion with the Department of Transportation, and they want to try out some other trucks on certain cars. We are agreeable to this, although we think that the present truck has proved itself very well in operation.

We have had no problems with the trucks other than what is alleged to be a poor ride quality.

Senator HARTKE. Do you think you could have gotten trucks which would have ridden better?

Mr. MINOR. We don't think so.

Senator HARTKE. Do you think you have learned anything from the metroliner experience? In other words, if you had it all to do over again, would you purchase less expensive technical equipment?

Mr. MINOR. I would have to preface any responses to that question by saying if we had known at the time what we know now, we probably would not have gone into the project, Senator. It has been an extremely costly one for Penn Central.

But in specific response, of course, we have learned a great deal from our experience. For example, as Mr. Saunder's statement points out, we should have started with a prototype, and I think the Department would agree to that position now.

Senator HARTKE. Your income statement indicates that before you pay equipment rentals you made money in railroad operations. Doesn't the high cost of equipment rentals reflect the current high levels of interest rates?

Mr. MINOR. That is the per diem figure, Senator. That equipment rental figure I think you are referring to represents the cost of using freight cars.

Senator HARTKE. Is that freight cars in this report?

Mr. MINOR. It is per diem rental, I believe, the figure you have reference to.

Senator HARTKE. Senator Pearson.

Senator PEARSON. I am interested in your comment, Mr. Minor, about the policy of Penn Central, that the Pennsylvania Railroad in 1965 anticipated it might be the better judgment to build the prototype and operate an eight-car train but the Department of Transpor-

tation somewhat pushed you into the acquisition of some 50 cars at that time.

You indicate that really is part of your problem today. Were you right about that judgment then, the prototype of a few cars and work out the bugs and then go into production?

Mr. MINOR. Senator, hindsight is always sharper than foresight.

Senator PEARSON. That is what I am talking about.

Mr. MINOR. And on the basis of our experience, yes, I think it is clear that we would have been far better off had we gone ahead with the prototype construction, gotten the bugs out before the total fleet was put into production.

Senator PEARSON. So, you are still in what you call "Learn as you go"——

Mr. MINOR. We still are.

Senator PEARSON (continuing). With respect to technology and utilization of the equipment that you now have?

Mr. MINOR. Yes, sir, if I may refer to the earlier comments that were made when the witnesses from the Department of Transportation were here, we certainly would cooperate wholeheartedly in the program that was presaged by Senator Case's question. We believe that funds are necessary now in order to get some of these cars put aside and work the bugs out and redesign, in effect, a substantial part of the fleet so that we are able to——

Senator PEARSON. Is the \$5 million figure pretty much in the ball park?

Mr. MINOR. I think that is in the ball park, Senator, yes, sir.

Senator PEARSON. The Congress has been fussing about the delays primarily. If we had gone the prototype route, would the delays have been any greater?

Mr. MINOR. That is hard to answer. I would say that they probably would not have been as great, because you would not have made as many mistakes on as many cars as were made. I should say, too, that you must remember, back in 1965 the Congress was impatient, too, at that time to get this program underway, and I think that the Department of Transportation was simply reflecting that feeling.

Senator PEARSON. I think that is right. You quite properly addressed yourself in major part of the metroliner with reference to the turbo-train, and you also indicated that the track construction, and so forth, wasn't creating any sort of a problem for you. Is that going to be a problem on the turbotrain between Boston and New York, for instance?

Mr. MINOR. Yes, sir.

Senator PEARSON. Have you got any estimate of what it is going to cost to upgrade your tracks that you utilize, the technology potential?

Mr. MINOR. Senator, we do not have a firm estimate on that at all or even a ball park estimate. The curves and grades—the curves particularly—on the shoreline route over which the turbotrain is operated, present significant operating difficulties, but more than that the signal system is not adequate for higher speeds. That would have to be completely upgraded, and there are a number of grade crossings east of New Haven that would have to be separated if you are going to run it at anything like maximum speeds of which this equipment is capable.

Senator PEARSON. The Canadians have a dual system? Don't they have a private railroad system and a Government system operating at the present time?

Mr. MINOR. That's right. There are two major Canadian railroads. The Canadian National is the nationalized railroad. The Canadian Pacific System, which is hotels, trucks, airlines and railroad, is a private system.

Senator PEARSON. Which part is conducting the turbotrains operation?

Mr. MINOR. The Canadian National is operating turbotrains.

Senator PEARSON. I understood one of the transportation witnesses to say—first, I heard, I haven't read any of these articles, that the Canadian turbotrains was doing very well, and then one of the witnesses this morning said they weren't doing so well. What is the situation up there?

Mr. MINOR. They took all the turbotrains out of service about 3 weeks after they started their service. They ran into trouble with them.

Senator PEARSON. Was it equipment or was it roadbed?

Mr. MINOR. No, it was equipment.

Senator PEARSON. How friendly are they? How much do you talk together about these things?

Mr. MINOR. Well, one of our executive vice presidents is a former officer of Canadian National, and we have an excellent rapport with both the major Canadian lines. We are a Canadian railroad, as well, as you know.

Senator PEARSON. What about this new quasi-public corporation for passenger service? Has there been any discussion in your management about whether or not the metroliner, the turbotrains, the contracts would be transferred over to the new corporation?

Mr. MINOR. Yes, sir. We assume that they will be.

Senator PEARSON. You assume they will be.

Mr. MINOR. Yes, sir.

Senator PEARSON. Thank you very much, Mr. Minor.

Senator HARTKE. Thank you, sir.

The next witness will be Norman W. Fesmire who is the vice president for marketing of the Budd Co.

**STATEMENT OF NORMAN W. FESMIRE, VICE PRESIDENT, MARKETING, THE BUDD CO.; ACCOMPANIED BY JOSEPH W. SWAIN, JR., OF MONTGOMERY, McCracken, WALKER & RHOADS, GENERAL COUNSEL FOR THE BUDD CO.**

Mr. FESMIRE. Mr. Chairman, Senator Pearson, my name is Norman W. Fesmire and I am vice president-marketing of the Budd Co. Sitting next to me is Joseph W. Swain, Jr., of the law firm of Montgomery, McCracken, Walker & Rhoads, general counsel for the Budd Co.

We appreciate this opportunity to appear before your committee in support of Senate bill 3730, a bill to extend for 1 year the act, as amended, relating to high-speed ground transportation.

The Budd Co., since 1932, has served the transportation industry in all its facets, air, rail, water, and highway. Budd has been privileged to contribute many innovations in these areas, for example, in the rail-

way passenger field, the first intercity streamlined train, the Pioneer Zephyr.

Budd strongly advocates a totally integrated transportation system employing all modes. The committee is undoubtedly aware that Budd is planning to sell its railway car manufacturing business for the reasons set forth in our president's statement to the shareholders of April 24, 1970. Nevertheless, it believes that passenger transportation, by rail, is a most important element in a total transportation system.

During the past decade there have been few technological advances in the railway passenger equipment field. A notable exception is the metroliner program for operation in the northeast corridor. The metroliners have acquired outstanding passenger acceptance and it is obvious the public wants and will utilize such a service.

Private industry has invested heavily in this New York-Washington program. To date the Budd Co.'s costs exceed the car selling price by more than \$10,500,000. This program has placed severe financial burden on the company.

The metroliner project began to take shape in mid-1965 when the U.S. Department of Commerce retained engineering consultants to prepare an equipment specification inspired by the objective of achieving an even better performance than the successful Tokaido line in Japan. This circumstance explains the presence in the specification of some ambitious and perhaps unnecessary requirements such as the capability of attaining 160 miles an hour.

Drafting of the specifications for the metroliner cars started on August 9, 1965, with representatives from OHS&T, their consultants and Penn Central participants.

The final specification was an amalgam of past experience and hoped-for objectives merged with input from the engineering consultants. These circumstances and the pressure of time produced a combination of vehicle performance standards and construction standards which were difficult to meet.

It should be noted that the final specification was not preceded by nor based on any preliminary research. No funds were provided for the construction of prototype units to serve as a means of testing and confirming the technical requirements of the production line units.

Nevertheless, it should be emphasized that, after solutions were found to certain technical problems which arose during the early part of the testing program, all of the cars passed a series of tests establishing that they do meet all the important performance requirements of the specifications.

The metroliner cars frequently are compared to the Tokaido system. However no valid comparison can be made. The Japanese National Railroads spent some 6 years on research and line construction before their system was placed in operation; they built an entirely new road-bed dedicated to high-speed passenger service only, with a minimum of curves and optimal riding qualities. The cost for equipment and plant was in excess of \$1 billion.

Both in time and money, the metroliner project is on a very different scale. Only \$9.6 million of Federal funds were committed to the construction and operation of the New York-Washington portion of the project.

The demonstration program was to commence less than 2 years from the date of the contract between the Department of Transportation and Penn Central Transportation Co.

The preparation, over a period of years, for the Tokaido line addressed itself to all aspects of the track and power system which resulted in a perfectly aligned rail and overhead wire. This very modern government-funded right-of-way is used for passenger trains only; whereas the Penn Central existing privately funded New York-Washington right-of-way must be used for both passenger trains and freight service.

The specifications for the metroliners included every possible new subsystem available and some which required invention.

The Japanese, however, used as much proven equipment in the rolling stock as possible. Their research was concentrated on track, power systems, and vehicle suspension. They used available propulsion systems and controls.

It is thus apparent that the major differences between the metroliner program and the Japanese National Railway system are that in the latter, extensive preliminary research was performed and substantial sums of money were committed. Given time, in this country private industry can provide the necessary research but the funds must be made available from public sources.

Accordingly, the Budd Co. supports Senate bill 3730 and advocates that additional Federal funds be committed to the development of high-speed rail transportation.

Thank you, Mr. Chairman.

Senator HARTKE. The Budd Co. is going out of the passenger equipment business, is that right?

Mr. FESMIRE. That is correct.

Senator HARTKE. Is that because of the metroliner?

Mr. FESMIRE. The metroliner program was a factor in the consideration.

Senator HARTKE. Was it a big factor?

Mr. FESMIRE. I don't think it can be said it was a big factor. I think our president's statement to our shareholders clarifies our thinking, and if I may, I would like to read excerpts of that to you:

A substantial change in the future of the passenger rail car industry has occurred over the last few years. The cost of car structures which the railway division produces has become a considerable smaller portion of the total cost of the cars. Budd's railway business was founded and based upon its success as a producer of mainline, longhaul passenger cars in which the majority of the cost was represented by the company's own design, its own manufacturing and assembly operations.

This market has disappeared. The situation has now changed completely. The amount of outside supplier produced items, principally electrical components and subassemblies which we must purchase runs in excess of 70 percent of the total cost of the self-propelled transit commuter cars in today's market.

That is basically the situation that exists.

Senator HARTKE. How long will it take to debug the present train of the metroliner?

Mr. FESMIRE. I don't know. I don't think I am qualified to answer that, sir.

Senator HARTKE. Could you get somebody in the company maybe to give us an answer?

Mr. FESMIRE. I think that can be answered better by the Penn Central who are in day-to-day contact operating these cars.

Senator HARTKE. What is your opinion of the principal problem?

Mr. FESMIRE. I think the principal problem goes back to the origin of the contract in that, as I said before, no time was allowed for prototype work, no time was allowed for debugging of a small quantity of these cars so that the production units would be reliable.

The basic problem, as stated by Penn Central, is reliability, the question of the reliability of components.

Senator HARTKE. You say in your statement that all your cars passed the requisite tests, and yet the Penn Central say 30 or 40 percent are out of service virtually all the time. How do you account for that?

Mr. FESMIRE. I think that is a combination of circumstances. They did in fact pass all the specified performance requirements. In fact, they exceeded the top speed as specified. There are conditions which could not be determined when the paper was blank, and some of these are the environment to which these cars are exposed under this type of service, the environment affected to some extent by speed which had not been investigated in advance.

I think there are other factors involved, electronically oriented maintenance personnel are not available to railroads in great quantities. They weren't previously required.

Penn Central is acquiring these now by direct contract with ours and some of our suppliers.

I think there are maintenance facilities required which had not been required for previous type equipment, and Penn Central is acquiring these at their own expense at some of their major terminal points.

Senator HARTKE. Mr. Minor of the Penn Central said that part of it was due to faulty design. Do you have any comment on that?

Mr. FESMIRE. As I said, in the prepared statement, the cars were built to a specification and there were certain parts of these cars, certain elements of these cars which were specifically defined by specification. There are devices, elements, that have reliability problems, yes. These are the things that need to be ferreted out.

Senator HARTKE. Senator Pearson.

Senator PEARSON. No questions.

Senator HARTKE. Thank you.

That concludes the witness list, and the subcommittee is adjourned. (Whereupon, at 12:05 p.m., the hearing was adjourned.)

ASSOCIATION OF AMERICAN RAILROADS,  
*Washington, D.C., June 10, 1970.*

DEAR MR. CHAIRMAN: I want to express the strong support of the railroad industry for Senate Bill 3730, extending the high-speed ground transportation program of the Department of Transportation.

It is highly important to continue the Federal Government's commitment to research and development in high-speed ground transportation. Efforts on the part of both private industry and government are needed if we are successfully to attack and ultimately solve the complex problems of intercity travel.

Under the High-Speed Ground Transportation Act, which would be extended by S. 3730, the Secretary of Transportation is authorized to undertake research and development and, when appropriate, to do so in cooperation with private industry. He is authorized also, under the Act, to contract for demonstrations to determine the contributions that high-speed ground transportation can make to more efficient and economical intercity transportation systems. Such demonstrations, in the words of the Act, shall be designed—

. . . to measure and evaluate such factors as the public response to new equipment, higher speeds, variations in fares, improved comfort and convenience, and more frequent service.

Acting under these provisions, the Department of Transportation and the Penn Central have been engaged cooperatively in demonstration projects developing and testing a new kind of high-speed rail passenger service in the Northeast Corridor. These projects—Metroliner service between New York and Washington and the TurboTrain operation between New York and Boston—show positive signs of promise, but they have not been completed and the results are not yet conclusive.

The Northeast Corridor demonstrations should be continued, and the way should also be left open for the Department to press forward with its other programs in high-speed ground transportation. The Act covers a wide range of research and development activities, including such things as material components, aerodynamics, vehicle propulsion and control, communications and guideways.

The government's participation in research, development and experimentation of these kinds involves a relatively small investment, considering what is at stake. The returns on that investment could be enormous in terms of finding ways to meet the traveling public's future needs.

I ask that this letter be made a part of the record of your subcommittee's hearing on S. 3730.

Sincerely,

TOM GOODFELLOW.

NATIONAL ASSOCIATION OF RAILROAD PASSENGERS,  
Washington, D.C., June 9, 1970.

Re S. 3730

Hon. VANCE HARTKE,  
Chairman, Subcommittee on Transportation, Committee on Commerce,  
U.S. Senate, Washington, D.C.

DEAR MR. CHAIRMAN: The National Association of Railroad Passengers strongly supports the extension of the High Speed Ground Transportation program. The popular success of the Metroliner service has proved the good judgment of the Congress in originally establishing this program. The solid evidence that people would use modern and efficient train service is in great part responsible for the renewed determination to provide good passenger service throughout the nation. The technology and knowledge developed under this program will be of great benefit to the Rail Passenger Corporation created by legislation recently passed by the Senate under the sponsorship of you and your colleagues on the Commerce Committee.

While NARP favors the prompt passage of this extension so that the Appropriations Committee can act on the Fiscal '71 budget of the Office of High Speed Ground Transportation, we are concerned about the relatively small allocation in the budget for "conventional" railroad trains compared to the amount earmarked for research into advanced means of surface transportation. The FRA proposes to spend only 1.1 million on the ongoing demonstration projects involving the Metroliner and the TurboTrain, in contrast to 18.3 million on advanced research. Clearly, new modes of transportation such as the Tracked Air Cushion Vehicle should be developed, but a considerable period of time will pass before this equipment is ready for everyday use. In the meantime, as the hearings on passenger service legislation before your Subcommittee demonstrated, there is an immediate need for rapid intercity service which for the time being must rely on existing technology.

The TurboTrain has never been given a fair test of its designed capabilities, yet this train or other turbine propelled trains, such as those developed by French National Railways, could be used in urban corridors all around the country on existing railroad tracks, e.g., New York-Albany, Chicago-St. Louis, or Los Angeles-San Diego. We recognize the need for research into the transportation forms of the future, but we do not think that this research should be at the expense of the fullest experimentation with high speed equipment already in being.

The fundamental impediment to effective use of the most modern high speed equipment is not one of inadequate vehicle design but the more mundane problem of inadequate roadbed and trackage. Neither the Metroliner nor the Turbo Trains are able to operate at their maximum speeds because of track conditions and the

numbers of grade crossings along their routes. It therefore seems logical that OHSGT should devote more of its budget and attention to a problem which curtails high speed rail passenger service—the condition of railroad rights of way.

Your subcommittee in its hearings on the Rail Safety bill focused a spotlight on the deplorable condition of much of the nation's railroad trackage. Improvements to roadbed is obviously not the primary task of the High Speed program, but the practical fact of trackage inadequate for high speed operation of passenger service today should be as important a concern as the creation of new and dramatic means of surface transportation for tomorrow.

In conclusion, we would like to thank you, Senator Prouty, and your colleagues on the Transportation Subcommittee for your leadership in finding imaginative and practical solutions to the problems surrounding rail passenger service. We hope you will act promptly and favorably to extend the High Speed Ground Transportation Act.

Yours sincerely,

ANTHONY HASWELL, *Chairman.*

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STATEMENT OF JAMES C. PONTIUS, MARKETING MANAGER, TRANSIT PULLMAN-STANDARD, CHICAGO, ILL. AND CHAIRMAN, PUBLIC MASS TRANSPORTATION COMMITTEE OF THE RAILWAY PROGRESS INSTITUTE, WASHINGTON, D.C.

Mr. Chairman and Members of the Committee: I appreciate this opportunity to submit to you the views of the Railway Progress Institute in support of Senate Bill 3730, which would extend for an additional year the statute establishing the High-Speed Ground Transportation Program.

The Railway Progress Institute, known as RPI, is the national trade association of the railroad supply and equipment industries. RPI is comprised of nearly 200 member companies, located throughout the United States. Our members provide the nation's railroads with locomotives, freight cars, components, tracks, signals and many other kinds of equipment and services.

As outlined in previous testimony by Reginald N. Whitman, Federal Railroad Administrator, S. 3730 contains two amendments to the existing law. One changes the expiration date of the statute to June 30, 1972—an extension of one year. The other amendment authorizes appropriations totaling \$21.7 million for fiscal year 1971. This amount would bring to \$98.7 million the total appropriation made for the six years of the program compared to the \$90 million initially authorized in 1965 for just the first three years.

We at RPI believe that the research, development and demonstration projects undertaken by the Office of High Speed Ground Transportation can lead the way in bringing about a much more balanced system of transportation throughout the nation. The projects have occasioned commitments of resources by private industry far in excess of appropriations made by Congress in support of the High Speed Ground Transportation Act back in 1965.

The Penn Central Railroad, for instance, has pinpointed more than \$67 million to the Metroliner project, compared with the \$12.4 million earmarked by the Federal Government. The Metroliner, running between Washington and New York and the TurboTrain operation, between New York and Boston, represent the first major commitment to rail passenger technology made in this century by the Federal Government. Yet the money allocated to these projects is a pittance compared with the billions of dollars spent on highways, air travel and waterways.

Going far beyond these projects, the High Speed Ground Transportation research and development program is geared to explore technology in several speed ranges. The higher the speed the longer the technology required for development, as Federal Railroad Administrator Whitman has pointed out.

RPI and its membership have been impressed with the plans underway in the Office of High Speed Transportation to provide a catalyst in the changes to come that will provide the nation with a better and more balanced intercity transportation system. Money is needed to continue that program. S. 3730 provides the legislative authority for that continuance. We at RPI urge its passage.

