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SHIFTING EMPHASIS IN TRANSPORTATION

AND ITS IMPLICATIONS FOR RESEARCH

Remarks by Deputy Under Secretary for Transportation Research A. Scheffer Lang, prepared for delivery at the 46th Annual Meeting of the Highway Research Board, 9 A.M., Thursday, January 19, 1967, Sheraton Park Hotel, Washington, D. C.

Let me state at the outset that I don't know whether transportation itself is changing in any significant way, but I <u>am</u> convinced that our <u>view</u> of transportation is changing. I think that we are now beginning to view transportation explicitly as a system phenomenon.

I mean more, here, than transportation as a <u>physical</u> system in itself. I mean transportation as an activity which is not only highly articulated as between its components, but is also highly interactive with its economic, physical, social, and overall institutional environment.

And I emphasize the word "explicitly". We have always understood that these interactions were critical; but we have never before been so determined to reflect them explicitly--even quantitatively--in our decisions on all transportation matters. We want an understanding, that is, which is both explicit and "operational."

We have always been acutely aware of the role which transportation plays in social and economic development. The policies at all levels of government have reflected this awareness.

We have, perhaps, been less aware of the role which transportation plays in our physical environment--but that awareness is now growing by leaps and bounds.

What seems different now is that we are no longer satisfied with a mere awareness and recognition of these interactions. We are determined to be very explicit about the nature of these interactions and to find ways to manipulate them rationally for the common good.

Adn we don't want to describe and work with just some of these interactions. We want to deal with all of them simultaneously.

Perhaps this is just because as our society grows larger and more complex we can no longer afford the luxury of partial solutions. Perhaps it is because the tools of analysis and the techniques of decision-making we now have or can envision make this explication of subtle complexity so much more manageable. Or perhaps it is because we have become increasingly impatient with our past mistakes.

Whatever the reason for this emerging view of transportation as an explicit "system" phenomenon, it is with us, and we are working harder every day to come to terms with it. I think its implications for research are substantial.

First and foremost, because this view emphasizes the explicit understanding and description of complex system phenomena, research has become an unavoidable imperative. Research is the business of developing explicit understanding. (Admittedly, this may be a chicken-and-egg proposition. Research has come to play an increasing role in every area of activity, not just transportation. Perhaps we are now determined to develop more explicit understanding of transportation as a system phenomena just because we are committed to research in general. But I think it is more than that.)

Second, because this view is a "system" view, the research it dictates focuses relatively less on existing technology, techniques, and institutions and more on the "holes" between them, less on evolution and more on broad innovations--than has been usual with previous research.

Third, because this emerging view is one which emphasizes understanding as a means for facilitating systematized decision-making, our research is being structured by a concept of new institutional arrangements for dealing with transportation problems.

I say, in fact, that just as we are trying to "systematize" our physical transportation activities with new hardware and more sophisticated operating techniques, so are we also trying to "systematize" our institutions that deal with transportation. We are trying to develop, in short, better ways for them to interact with each other in their respective decision-making roles--and where necessary we are ready to build new institutions to bridge the gaps between our present ones.

What do I mean by "institutions," here? I mean:

1. Private companies that own or operate transportation facilities.

2. Federal, state, and local governments:

   a. As regulators or promoters.
   b. As planners, investors, or operators.

3. Users of transportation--public or private.

4. Non-users of transportation who are in some way affected directly by it.

5. Universities and other research institutions.

These institutions all interact in complicated and important ways; and it is this set of interactions which give transportation its "system" character every bit as much as the interactions between rail and truck, transit and auto, or urban and inter-city transportation operations. And, because we are now trying to be explicit about these institutional interactions, not just about the more obvious physical ones, we are changing the character of the total set. This, in turn will change the environment for research and will, I think give it a changing focus.

So our push toward an explicit and operational understanding of transportation as a system is having three effects on research.

First, it is making research more important.

Second, it is giving research a more innovative and less evolutionary character.

Third, it is causing research to respond to and live within a more complex and "systematized" institutional framework.

Let me try to give you some examples of what I mean, here.

Take first the approach that more and more freight-hauling transportation companies are taking to the interaction between their operations and those of their customers. They have come to realize there is "system" here--and more and more they are studying this "system" in depth. To an academic, much of this study might not seem to be research, because the techniques are not sophisticated. But looked at in context, these companies <u>are</u> doing research, and it is on problems they really did not know were there before.

Look also at work being done on such subjects as the affect of public transportation service on the locational decisions of households. We want to be explicit about this interaction; and it is important enough to warrant research where even a few years ago it would have seemed unlikely.

So we are doing <u>more</u> research!

Look, then, at the kind of research being done under our High Speed Ground Transportation Program at the Department of Commerce. There we are supporting technological research that is focused less on the evolution and improvement of present transportation technology and more on identifying technology that does not exist. We are probing the "holes" in our present hardware spectrum. We are looking for ways to bridge the capability gaps and to stimulate the developments of a more fully articulated total transportation capability.

Or look at the program of urban transportation research contemplated by the 1966 amendments to the Urban Mass Transportation Act of 1964, amendments introduced and successfully championed by Congressman Reuss who is here today. This program, again, focuses on broad innovations in urban systems, innovations that can serve new combinations within the complex structure of urban needs, innovations which can better articulate our transportation with its physical and social environments, not merely with its economic imperatives.

So we are doing different research!

Finally, look at the kind of research we are trying to do in the context of our Northeast Corridor Transportation Systems Planning Study at the Department of Commerce. We are trying there to develop techniques that can support and make more explicit the choice between alternative long-range investments that must be made by a literal host of institutions in the region: the Federal Government, state and local governments, and--equally important--private transportation companies. While we really are trying to come out with a usable analysis, this project is fundamentally research; for we are trying to learn, here, how to articulate better a multi-institution decision process. We look for this process itself to become more and more "systematized" (as I have used that word), and this means we must put our work in a somewhat new and different context.

And what we are doing is in the large very similar to what the Tri-State Transportation Agency is working on, an agency for whose efforts Dr. Ronan has been so largely responsible. They too are attempting to develop ways to articulate a far more complex transportation decision-making process than anyone has dealt with before--and to do this within an institutional working environment which is also new!

So we are doing research in a more complex, a more "systematized" institutional environment!

I made a special point earlier about our general attempts to put more "system" in those institutions which are collectively involved with transportation.

You know, we have an example of that process right here in our midst; for never has there been more interest in broadening the view of the Highway Research Board to include not just highway problems, but those of all forms of transportation. This question has, in fact, occupied much of the attention of the very committee which is sponsoring this session here this morning.

And we have another example of the process of institutional systematization right here in town; the impending creation of the Department of Transportation. The legislative history of that development, moreover, says some pretty clear things about research: there needs to be more of it; it needs to focus more on the holes in our transportation capability and transportation institutions; and it needs to work within a more highly structured decision-making environment.

Now, you "systems types" in the audience may conclude that all I have said is that we need more "systems research." Don't stop there! This new determination to identify the system in transportation in explicit, operational terms means much more than that.

I urge you to think about it.

R E M A R K S

O F

MR. A. SCHEFFER LANG

FEDERAL RAILROAD ADMINISTRATOR

U. S. DEPARTMENT OF TRANSPORTATION

On the occasion of the dedication of the CHAMP CARRY TECHNICAL CENTER of the Pullman-Standard Division of Pullman Incorporated.

June 20, 1967
Hammond, Indiana

langas 670620

It is a great honor for me to be here on this auspicious occasion and to be allowed to talk even briefly to such a large and distinguished audience. For someone like myself, with a life-long interest in railroading on the one hand and research on the other, it is not only an honor to be here, it is a distinct pleasure, as well.

Because of my long-standing interests, I could deliver a lengthy filibuster on the subject of railroad research and research facilities. This is something I shall try to avoid this afternoon, because I think that what you are seeing here today speaks better for itself than I can.

I do want to use this opportunity, however, to point out the larger significance of what the Pullman-Standard people are doing here and to suggest further that there is much work for all of us that is of critical importance to the future of railroad transportation but to which we have not yet adequately addressed ourselves. In short, there are far too many fundamental questions about the future of railroad transportation which we have yet to ask, let alone to answer in any careful way.

In one sense, I am saying that we need to do much more research on railroad problems. That it is an over-simple characterization of the point which I should like to make, however, because research is literally and figuratively much more than meets the eye.

Let me address myself first, then, to that issue.

In recent years we have heard more and more discussion in the railroad industry, as in almost all other sectors of the American economy, about research. Research has become a fashionable thing to discuss. Research has become identified with progress. No one really dares to be against research.

In the face of this interest, it is surprising how poorly we seem to understand what makes research effective and, in fact, what it is that research is all about. When I say "we", moreover, I mean not just the railroad industry, but most industries and most segments of government, as well.

Too many people, when they think of "research" think only about the sort of thing which goes on in laboratories and the sort of new and exotic pieces of "hardware" which come out of research establishments. Too few people recognize that research in the social sciences, research in the law, and research into the structure of organizations and nature of the management process can be and is every bit as much "research" as that which produces new plastics, new electronics, new airplanes, or new railroad equipment. Research does not deal simply with tangible things; it deals with ideas, with concepts, and with ways of organizing activity, as well.

Research is <u>fundamentally</u> a process of asking carefully structured questions and of developing the answers to these questions in a carefully structured way.

Research is therefore a frame of mind, and even more importantly, an organizational attitude.

These laboratory facilities being dedicated here today are a symbol of just such an attitude. They are, in fact, more importantly a symbol of the research attitude than they are the substance of a research effort.

You do not get progress by merely building research facilities. You get progress by building the attitude of organizations and by putting to work the trained minds of those who compose these organizations. Good research facilities are important and in many areas of inquiry indispensable tools. One ultimately judges the quality of a research effort, however, by the questions which it asks, not by the facilities which it employs.

Good research asks "good questions" and is serious-minded in its search for the answers. "Good questions" are at once tough questions and questions which have genuine relevance to the concerns of the questioning organizations and the environment in which they operate.

My conviction is that we in the railroad industry have neither asked enough good questions nor pursued their answers with sufficient seriousness of purpose. When I say we in the railroad industry, moreover, I mean all of us who are in any way involved in railroad transportation: the railroad labor organizations, the railroad supply industry, and government at all levels.

Railroad management has spent much time asking the easy questions about how it could preserve its historic markets for railroad transportation. It is only recently that it has begun in earnest to ask and answer some of the tough questions about how we can build new and better markets for railroad transportation.

Management and labor have spent much time thinking about how to preserve their historical prerogatives at the bargaining table, but relatively little time to working on the tougher questions of how to create new and more fruitful management-employee relations and a stronger railroad transportation system.

The supply industry has spent much time asking easy questions about how to make present railway equipment cheaper and better, but seems to have spent much less time asking the tough questions about the future requirements for railroad transportation and the demands which these will exert for entirely new equipment concepts.

Government seems to have spent its time asking that the railroad industry answer old questions about rates and service and almost no time asking, together with the industry, the tough questions about where railroad transportation should be going and how best it could get there.

It seems to me that the time has come for us to ask more of the tough questions and for us to make a firm commitment to find answers to thse questions in a much more carefully structured way than has been typical of our industry's efforts in the past. The time has come, as it must to everyone who is building a future, for us to put in more hours doing our homework relative to the hours we spend sitting in class. We have a great many tough questions to which we should be addressing ourselves in earnest. Allow me to pose only two or three by way of illustration.

Let me pose a very fundamental one to begin with. What kind of a transportation product should we be using the resources of the railroad industry to turn out ten to twenty years from now? We cannot answer that question by merely saying more containers and more unit trains; that kind of answer merely begs the question! What <u>will</u> the demand for long-distance transportation be in that future era? What spectrum of non-railroad transportation capabilities will be available to serve the market? What can railroad-related technology and operating capabilities produce that these other transportation systems cannot produce so well?

Who is really asking these questions seriously and pursuing the answers in any careful way? This last question <u>I</u> can answer. No one!

A second fundamental question: Where is container transportation going to take us? What, as an example, are the economics of marine container transportation and how are these going to impact the railroad industry and its needs for equipment and facilities? What is the shift to container movement going to mean for the historical business relationships between the railroad companies and their shippers and how can the industry respond to these changes in the best interests of our Nation's transportation system?

Are any of us taking a hard look at these hard questions? I can answer this last question, again. It is doubtful!

Let me turn to a kind of question which is physically more tangible. What are the limits in speed and its associated costs of the steel wheel on steel rail concept? What would happen if we found that the future market for transportation required railroad speeds of 200 mph in order that railroad transportation be competitive with other forms? Where would we be in trouble with our present technology: the wheels, the trucks, the braking systems, the rail, the track structure, the subgrade, or where?

Who in this country is asking these questions and pursuing their answers with any care? Again, I can answer this last question.

We are making a start in our High Speed Ground Transportation Program within the Department of Transportation. (Parenthetically, this leads to still another question: Why have we had to wait for Federal money to begin work on questions such as these?)

Of course, these are what might be described as "global" questions. Many would think them, therefore, a waste of time. What this reaction overlooks is that much if not most of the work which is done on answering detailed questions inevitably goes to waste unless these detailed questions are themselves related to larger questions which are both meaningful and under active and serious discussion. Any research to be of lasting value must be of a piece with its environment. If we are not working on the "big picture" it makes little sense to fuss over any detail whatsoever.

The Federal Government, of course, has some substantial responsibility for the "big picture" in the transportation industry as a whole. It is incumbent upon us, therefore, to participate in the asking and answering of these very questions that I have just alluded to. It would seem to me, however, that the railroad industry and its suppliers cannot leave this kind of question-asking solely to the Federal Government.

It seems to me, in fact, that the railroads and the railroad supply companies ought to be anticipating the kind of questions which the governments, because of their responsibilities, are bound to ask. It seems to me that the railroads and the railroad supply industry ought, moreover, to be in a position both to contribute to the asking of these questions and to evaluate and use the answers as they emerge.

I recognize very clearly that organizing to answer these big questions, and many of the smaller ones, is a prodigious and difficult task. The questions are there, however, and they will not go away. From where we sit in Government, it is painfully clear that these questions must be asked and must be answered. We do not think, however, that Government can or should be asking and answering such questions by itself, because these questions are first and foremost the railroad industry's questions to ask and to answer. While the new Department of Transportation now has a special responsibility to be informed on questions such as these, we would hope that the industry through its own initiative would be capable of providing most of the answers that are needed.

We intend to do our part in this kind of research and planning process, and our high speed ground transportation program is clear-cut evidence of this intention. The

Federal Government, however, can never plan for the railroads or do their research for them nearly so effectively as the railroads and the railroad supply industry can do these things themselves - if only they will!

There is another thing about research which needs to be understood at this point, something which, in fact, I cannot overemphasize. Asking tough questions and pursuing their answers seriously is an act of faith in and commitment to the future! If one has no faith in the future, if one has no commitment to the future, then research is all a great waste of time. The Federal Government expects to be here in the future; so it has a commitment to the future and this commitment finds one important expression in the conviction of this administration that research is both important and necessary.

I, for one, have no less faith in nor any less commitment to the future of railroad transportation. To me the importance to the entire railroad community of both research and the entire attitude towards problems which it implies is beyond question.

If I am concerned about the overall state of affairs in the railroad industry--and I am-- it is not so much because we do not have answers to the many questions which we face. These answers are not easy to come by. I am concerned, rather, because I do not see enough of the important questions being asked -- with enough seriousness,

with enough care, and with enough trained inquisitive minds.

I see--or I think I see--too many organizations trying merely to do the same business in essentially the same way, albeit trying to do this business a little better than formerly. This is fine; but it is not good enough in a modern world!

My hope is that these research facilities being dedicated here today will bring forth greater efforts on the part not only of Pullman-Standard, but on the part of others as well, efforts to ask tomorrow's questions rather than those of yesterday.

To me, these research facilities represent a commitment on the part of Pullman-Standard to the future. The money which has been invested here is in itself an act of faith in the future.

Each and every one of us here should leave these ceremonies not with a mere picture in his mind of buildings and machines and the evidence of modern technology, but with an appreciation that railroad transportation can and will have a great future only if each of us makes a personal commitment to do the things which the future requires of us: that we be willing individually and collectively to ask the tough questions and do the hard work that answering those questions will necessarily entail.

GOVERNMENT AND RAILROADS OF TOMORROW

Remarks of A. Scheffer Lang, Administrator,
Federal Railroad Administration, before the
Annual Meeting of Data Systems Division,
Association of American Railroads, Houston, Texas
Tuesday, September 12, 1967, 12 Noon.

I did not choose the title of my talk simply because it sounds like the theme of this Annual Meeting. I chose it because the Federal Government is quite literally interested in the railroads of tomorrow and not those of yesterday. I chose it because the creation of the Department of Transportation is in itself an expression of the government's interest in transportation, and the railroads, of tomorrow and not of yesterday. I shall try to make clear why this is so.

I cannot resist commenting at the outset, however, on the Data Systems Division meeting theme and the happy choice of Houston as the meeting's site. My reaction is that after having been accused by railroad management of being in orbit for many years, railroad data systems people have now decided to come down here and see how it is really done! Nothing that I have to say about government is quite as far out as what you saw yesterday at the space center, but those of us in the Department of Transportation are just as excited about the future as the people you met from the National Aeronautics and Space Administration.

The Operations of DOT

As most of you know, the Department of Transportation officially went into business on April 1 of this year. As the

twelfth Cabinet-level Department in the Executive Branch, it has direct responsibility for a wide range of government programs in all areas of transportation. It administers the Federal-aid highway program and the national highway and traffic safety programs. It administers the aviation safety programs and operates the Nation's air traffic control system. It includes the United States Coast Guard with all of its responsibilities for navigation and safety at sea.

The Department further includes a new agency known as the Federal Railroad Administration which has responsibility for three small, but I like to think not unimportant, railroad-related programs: The Federally-owned Alaska Railroad, the railroad safety regulation program formerly in the Interstate Commerce Commission, and the high speed ground transportation program formerly in the Department of Commerce.

Over and above these direct program responsibilities, the Department of Transportation is charged with a set of general responsibilities relating to the transportation system of our country. These overall responsibilities are best described by quoting directly from the Declaration of Purpose in the Act which created the Department of Transportation. The Congress said there that

> "...the establishment of a Department of Transportation is necessary in the public interest and to assure the coordinated, effective administration of the transportation programs of the

> Federal Government; to facilitate the development and improvement of coordinated transportation service, to be provided by private enterprise to the maximum extent feasible; to encourage cooperation of Federal, State, and local governments, carriers, labor, and other interested parties toward the achievement of national transportation objectives; to stimulate technological advances in transportation; to provide general leadership in the identification and solution of transportation problems; and to develop and recommend to the President and the Congress for approval national transportation policies and programs to accomplish these objectives with full and appropriate consideration of the needs of the public, users, carriers, industry, labor, and the national defense."

This is a very broad charge, indeed. Let me discuss briefly some of what this charge means.

DOT--The Focal Point

It follows necessarily from the enormous program responsibilities of this new Cabinet-level Department that DOT has a major interest in where each mode of transportation will be going in both the immediate and distant future. DOT must plan, build, and operate the Nation's air traffic control system, an indispensable element in the growth, efficiency, and safety of both private and commercial air transportation. DOT must help plan and must itself make the key investments in the expansion and improvement of our highway plant, an indispensable element in the growth, efficiency, and safety of highway transportation. DOT must develop and operate facilities for the control and safe operation of all marine transportation. Finally, DOT must

plan for and administer all governmental transportation safety programs, regardless of mode.

With these direct responsibilities for key elements in our total transportation system, DOT must have a detailed and comprehensive appreciation of how the demand for transportation will develop and, equally important, how our collective capability to provide transportation will develop. Without adequate foreknowledge in this regard, DOT cannot administer these direct program responsibilities efficiently and effectively.

In a word, the future of each and every mode of transportation is something which DOT must know about in order to manage its part of our total transportation capability.

Order From Chaos

DOT's involvement doesn't stop here, however; it goes well beyond these specific operational responsibilities. For if DOT is "...to provide general leadership in the identification and solution of transportation problems...," it must know both where transportation is going and where it can go.

But knowing how to read a roadmap is not sufficient to develop a more effective overall transportation capability for the country as a whole. This knowledge merely brings one hard up against the tough questions of which directions are best and which actions should and should not be taken either in the public or the private sector. These are not questions that DOT itself can answer. The answers must come, rather, from

state and local government, from the Congress, and from private investors.

DOT's responsibility here is rather to ensure that as many of the relevant questions as possible are asked and answered. DOT is a question-asker, a fact-finder, a fact-interpreter, an organizer of the issues, a provoker of decisions.

And importantly in all of this, DOT has the special responsibility for raising and exploring questions about the relative role of various modes and types of transportation services that have so often gone unasked, and certainly gone unanswered for so many years. To put this role in terms that are closer to home: DOT must ask the question of whether intercity railroad passenger service can and should be maintained as an essential element in our overall transportation capability; DOT must ask whether highways should be built to take larger trucks and railroad investments which look towards providing certain truck-competitive services be discouraged. And DOT also must ask if the kind of improvement in railroad freight movement, speeds, and service quality that seem technologically possible will take place or can be encouraged to take place in time to obviate the need for substantial capital commitments to the development of all-cargo air transportation ground facilities.

DOT and The Railroads

In all of this, DOT has a somewhat special concern for the future of railroad transportation. Our direct operating responsibilities in this area are almost insignificant in comparison to the responsibilities DOT has with respect to other modes of transportation. But, perhaps in part because of this lack of direct involvement on the part of the Executive Branch of the Federal Government, there are many very difficult questions about the future of railroad transportation which have gone entirely unasked and therefore necessarily unanswered.

In some ways, the most important set of questions have to do with the substantial unexploited potential for improved and more economical transportation service which railroad technology seems to offer. These questions have special importance, because they must be viewed against the backdrop of some apparent limitations in the extent to which the technology of other modes can be further adapted and improved.

A special part of this problem arises from the general belief that the level of research and development effort in the railroad industry--because of a combination of public and private policies--has been well below what the potential results might have justified. In large part, our high speed ground transportation research and development program is aimed at just this question.

Another set of questions relating to the railroad industry and of special interest to DOT stems from the

numerous private and public studies and statements which have pointed up the possibility that government promotional and regulatory policies may be unduly disadvantageous and constraining to railroad transportation in an era when the competitive structure of the transportation industry has changed and is changing very rapidly. The questions which must be asked and answered in this regard are particularly complicated and perplexing. They are intimately associated, moreover, with questions regarding the inherent technological and economic characteristics of the various modes of transportation and the extent to which these characteristics can be more effectively exploited and coordinated in the years ahead.

It is for these kinds of reasons that DOT has a rather special interest in railroad transportation and a rather special responsibility for railroad transportation. It is for these reasons that the Federal Railroad Administration faces problems and responsibilities that go well beyond those associated with its limited role as an operating or program agency within the new Department.

Data Systems, Railroads and The Future

The Department and the FRA necessarily have a vital interest in the railroad industry's efforts to exploit the concepts and capabilities of modern data systems. This is an interest, moreover, which goes somewhat beyond data systems

as such to the kind of people who are responsible for their development and use; that is, to those of you here in this room!

The nature of our concern with railroad data systems should be fairly obvious to any close observer of railroad operations and competitive conditions. The production of economical, high-quality railroad transportation poses management control problems of the highest order of complexity. Modern data processing and communications technology offer the most dramatic potential for improvement in the management control of all production processes ever known. Quite simply, modern data systems, if we can learn to master them, promise a minor--and perhaps a major--revolution in our capability to produce transportation with our railroads.

The shape and timing of this revolution is a critical element in any assessment of the extent to which competitive relationships in transportation can or will shift over time. Planning in even a general way for our overall national investment in transportation facilities must take all of this into account. Put another way, if you do not have some idea of where railroad data systems are going to go, then you cannot have a complete picture of where the railroads are going to go; and if you do not have some idea of where the railroads are going to go, then you cannot make

intelligent judgments as to where our highway, air, and water transportation systems ought to go!

But I pointed out a moment ago that the people associated with the development and use of railroad data systems are in themselves an important element in the scheme of things. Perhaps, because of past associations, I am biased here; if so, let me air my bias. Data systems people have increasingly come to realize that they are in a long-run business, and a business which involves them in the planning (or lack thereof) for almost every facet of their company's operations. Railroad data systems people, therefore, are, or at least should be, learning to come to grips with the future.

We have not always heard a lot about the future in the railroad industry! We have always heard a lot about the past: The wrongdoings of the industry in the past, the problems which the industry has inherited from the past, the mistakes which government has made in the past, the glories of the industry in the past! We hear very much less about what the industry will do in the future, where it will go, how it will get there.

We hear a lot about how the industry has installed CTC since the war. We don't hear very much about the kind of signal and control systems the industry will install by 1975 or 1980. We hear a lot about all the automated

classification yards which the industry has installed. We don't hear very much about what the industry plans to do to get rid of switching cars in the future. We hear a lot about the "new cars" that have been built around turn-of-the-century concepts in couplers, brakes, suspension systems, and train handling. We don't hear very much about how the railroad vehicle and the concepts of its physical use are to be restructured so that we can make a significant step forward in rail transportation capabilities in this century.

We hear some things about the data systems which railroads have installed. We hear even more about the data systems which railroads are planning to install. Let me repeat: We do hear a good deal about the data systems which railroads are planning to install.

Data systems and planning, data systems and thinking about the future go hand in hand. That makes data systems, and data systems people, not unique, but just a little special in the railroad industry. That gives data systems people some special responsibility; and that occasions some special interest on the part of those of us in government in data systems people as well as in data systems.

Don't get me wrong. I am not suggesting that data systems are the sole salvation of the railroad industry. I am not suggesting that data systems people are the important people in the industry. I am not suggesting that data systems people have done their job as well as they should have. I am not

suggesting that government must necessarily be interested only in what railroad data systems people are doing.

What I am suggesting is that you people and your work occupy a special kind of place and role in the railroad industry and that you thus inherit a slightly special kind of responsibility. Your business requires planning ahead. If you do your job well, the industry as a whole cannot help learning something about planning ahead and cannot help developing an appreciation of what planning ahead can mean to it.

Where I sit now in the Department of Transportation the name of the whole game is "planning ahead." It is not our job to plan for the railroad industry or for any part of the transportation business other than those parts which we must manage ourselves. But it is our job to see to it wherever we can that those who should be planning ahead are doing so. That includes the railroad industry, whose future the people in today's Department of Transportation think is very bright indeed!

You people have an important role in shaping that future. You people have an important role in clarifying that future. You people are part of that future.

Government is vitally concerned with the railroads of tomorrow. So government is vitally concerned with you.

Remarks of A. Scheffer Lang, Administrator,
Federal Railroad Administration, before the
Annual Meeting of Locomotive Maintenance Officers
Association, Sherman House, Chicago, Illinois
Wednesday, October 11, 1967, 12:30pm

When George Beischer first asked if I would speak at the luncheon here today, I was both honored and pleased to have been offered an opportunity to participate in the Annual Meeting of the Locomotive Maintenance Officers Association. Since that original invitation, I have discovered that the audience today includes many others from the railroad industry and the railroad supply industry who are also here in Chicago for the meetings this week, so that I am now doubly honored and pleased to be here.

Because the Department of Transportation and the Federal Railroad Administration are still new to most of you, I want to say a little bit about those organizations and what they do. But I want to go on to speak more specifically about locomotives and the special interest which we in government have in locomotives, an interest which we share with so many of you here today.

Let me first, however, preface my remarks with what might be billed as a "denial." It seems there are a few in the railroad industry who think that in recent months I have systematically set about "denouncing" the railroad industry at every opportunity. It shall be for you to judge whether anything I have to say today constitues a denouncement of any kind; I can only assure

you that I have no interest in denouncing anyone, least of all an industry I have grown up in and one in whose future I plan to participate. What I have been trying to do in these past few months is to explain to as many in the railroad industry as will listen how the future of railroad transportation and the problems the industry faces in realizing that future look to those who are in government. My intentions, and those of the Department of Transportation, are not to criticize the industry but rather to find ways in which government can help ensure that railroad transportation will achieve its full potential in the years ahead.

Most of you realize, of course, that the Department of Transportation, and hence the Federal Railroad Administration, officially went into business only six months ago. The establishment of the Department - - a goal of legislators and transportation interests for over 90 years - - has finally brought most of our wide range of government transportation programs together in one place. In addition to the programs in the Federal Railroad Administration, the Department administers the Federal-aid highway program and the national highway and traffic safety programs. It administers the aviation safety program and operates the Nation's complex air traffic control system. It includes the United States Coast Guard with its responsibilities for navigation and safety at sea.

Additionally, and perhaps most importantly, the Department has an overall mandate to facilitate the development and improvement of coordinated transportation service; to encourage cooperation between government, carriers, labor and other interested parties toward achieving national transportation objectives; to stimulate technological advances in transportation; to provide general leadership in the identification and solution of transportation problems; and finally, to develop and recommend policies and programs to accomplish these objectives. In short, The Department has a responsibility to provide general leadership in the identification and solution of national transportation problems.

As one of five operating agencies within the new Department, the Federal Railroad Administration has responsibility for three rail-related programs: 1) the railroad safety functions that were formerly handled by the Interstate Commerce Commission, 2) operation of the Federally-owned Alaska Railroad, formerly in the Department of Interior; and 3) the so-called High Speed Ground Transportation Program, which includes the Northeast Corridor Transportation Systems Planning Study, the High Speed Ground Transportation Research and Development Program, and our High Speed Ground Transportation Demonstrations Program. The latter presently has three projects under its wing - - the high speed Washington-to-New York service on the Pennsy, the Boston-to-New York operation of the United Aircraft turbine train

equipment, and the Washington-to-Florida auto-train demonstration.

But the Federal Railroad Administration - - like the other operating agencies in the Department of Transportation - - has a double role. While it has the responsibility for administering the aforementioned programs, it also has the equally important responsibility of providing the principal reservoir of expertise in the Executive Branch on railroad matters. In this second role, our job is to generate "input" to the more general problem-solving activity carried on by the various Department of Transportation staff groups headed by Assistant Secretaries for Policy Development, International Affairs, Public Affairs, Research and Technology, and the General Counsel. This input works in reverse too, and the resulting two-way dialogue between the operating administrations, such as the Federal Railroad Administration, and the Department of Transportation staff groups is an essential ingredient in the Federal transportation policy-making process.

The importance of the formation of the Federal Railroad Administration to the railroads is quite plain. There is now, for the first time in recent history, an agency within the Executive Branch of Government whose focus is specifically on the problems of railroad transportation and its future role in the economic and social life of the country. It is difficult for anyone who has not worked in the railroad industry to appreciate the importance of this event.

This brings up a number of questions for the industry, however, not the least of which is: Where do we go from here? Nowadays, the production of high-quality railroad transportation poses problems of the highest order of complexity. Competition, spiraling operating costs, inflation - - you name it. Until someone proves differently, however, I am firmly convinced - - as is Secretary Boyd - - that the industry - - if government provides it with the right environment - - can meet all comers. I am also convinced about another thing: The people that make up this audience - - you who literally move America's railroads - - can be an important force in helping to create that environment.

Our problems in locomotive safety offer one example of why this is so. When the Interstate Commerce Commission's safety responsibility was transferred to the Federal Railroad Administration, our basic mandate regarding locomotive inspection did not change. The law still says that the first duty of our inspectors is to see that the carriers make all their inspections and tests in accordance with prescribed regulations. Our field staff inspects the equipment, and when they cannot get corrective action through administrative handling, they have no recourse but to initiate the legal steps provided for in the law.

Now a lot of you maintenance men don't appreciate this. And we don't like it either. We are, in fact, disturbed at the large volume of prosecutions for minor matters. Our fines seem, unfortunately, to be more of a nuisance than an incentive for change.

The fact of the matter is, however, that we are finding a large number of defects and continuing to order a large number of units out of service.

Although the Annual Report of the Bureau of Railroad Safety for Fiscal Year 1967 has not yet been completed, we are disappointed to realize already that 1967 was not a good year for locomotives. The report will indicate that during the year there was an increase in the number of defective units, a substantial increase in the number of units ordered out of service, and, most discouraging, an increase in the number of accidents. With few exceptions, this situation has been worsening over the past five years.

Now, in an effort to bring about improvement, the Bureau has, in the last two years, vigorously increased its inspection efforts, particularly at the larger maintenance points, increased the number of prosecutions for non-compliance, and has had representatives of the Washington office accompany top mechanical department officials in making on-the-ground observations of maintenance and inspection practices on some railroads.

While we would like to believe that in certain instances our efforts have brought about some improvement, it is quite clear that in the aggregate, neither singly nor in combination, do they possess the proper curative powers. In a word, the step-up hasn't worked.

As you are aware, the vast majority of locomotives inspected by our people have supposedly already been inspected by carrier personnel. I would like to insert here that there isn't a major railroad in the United States that does not have locomotive maintenance instructions which are far tighter than any requirement which we impose.

With the results being what they are, however, we are inevitably led to raise several basic questions: Do your inspectors have a copy of our inspection regulations? Do they know what the regulations require and what constitutes a defect? Is your first-line supervision conversant with the locomotive inspection requirements?

These in turn lead to other questions: Is there an open communication pipeline between the mechanical department officials and the people on the line? How effective is your railroad's training program?

Since many of our people in the Federal Railroad Administration have worked in the ranks of railroad mechanical departments, we know that you are as interested as we in better compliance with the regulations and in the promotion of safety.

This leads me to where you gentlemen come into the picture - - and possibly where we fade out. If the industry really took a good hard look at this inspection situation you could probably put us out of the inspection business within three years. I can visualize the myriad problems that railroad shops are having around the country - - long hours, employee shortages, the usual budgetary ups and downs, and rising costs. My people tell me that, all things considered, the inspection job being done is good. But apparently, some of the things occurring just don't make sense.

Can you imagine buying a $500 colored television set and then when it breaks down running out on the street to grab the first man you come to and asking him to fix the set?

Railroads are not spending $500 but a quarter of a million dollars for a modern locomotive, yet it appears that sometimes they may be doing basically the same thing in attempting to keep them running. This is where proper training comes into play. For if a railroad's own instructions were complied with, it would not only boost locomotive utilization, it would also keep our people out of your hair. It seems pretty clear that the needs here are for proper training and improved control.

These needs are ones which we are sure that most of you here in this room recognize yourselves. We can only reinforce this recognition by pointing out that these are the very needs

which we also perceive in looking at these problems from our vantage point.

I would be remiss, however, if I were to leave you with the impression that railway mechanical departments are the only ones who seem to be faced with these problems. The fact is that we are conscious of similar problems in our own Bureau of Railroad Safety. Accordingly, we have developed a reorganization plan for the Bureau, one which is designed to achieve two particularly important objectives, among others.

The first of these objectives is to upgrade the technical quality of our staff work and, in the process, to create a more analytically-oriented approach to all railroad safety problems. The second objective, and this ties in directly with my comments of a moment ago, is to provide - - within the framework of the Bureau's organization - - a much more intensive, continuing program of training for our field inspection personnel. Just as we see a need for better training of railroad maintenance personnel, we see a need for better training of our own personnel who work with yours.

We also have decided that the time has come for us to take the first steps towards a thorough and systematic review of railroad safety problems. The goal: A restructuring of our safety regulatory activities so that they more appropriately

reflect the real safety problems which the railroads face today. As most of you know, our Bureau of Railroad Safety is charged with administering regulations and laws which have their roots in the safety problems of a bygone era. While this does not mean that all of these laws and regulations are inappropriate, it does suggest that, in detail, they must be less than fully consistent with the technical and operating problems of today.

Accordingly, we hope - - within the next few weeks - - to establish the first of several special study groups whose mission will be to look at each major area of railroad safety from "the ground up" and to pinpoint where the important problems are and where a governmental regulatory program can contribute meaningfully to the solution of those problems. These study efforts will necessarily involve technically qualified personnel from the railroad industry itself, a need which many of you will hear further about in the immediate future.

We do not expect these study efforts, or our plans to reorganize and upgrade our existing regulatory activities, to work wonders overnight. We are convinced, however, that, even as we call upon you people in the railroad industry to improve your safety performance, we ourselves must be doing everything that we can to improve our performance in this common area of concern.

In all of this, our objectives are not to create regulations, or to enforce regulations, or to prosecute violations. Our objectives are to play a constructive role in improving the industry's safety performance. It is safety results that count, not the number of dollars in fines we collect for the Federal treasury!

This attitude, I assure you, is that which the Department of Transportation as a whole takes toward its mission. The job of DOT is not to produce transportation or to direct others to produce it in ways that we as bureaucrats may think appropriate. Our mission, rather, is to help you people who do produce transportation to produce better transportation - - transportation that is better for the public, better for the transportation industry and its employees, and better for the country.

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Remarks of A. Scheffer Lang, Administrator,
Federal Railroad Administration, before the
Annual Convention of the National Association of
Railroad and Utilities Commissioners, Diplomat Hotel,
Hollywood, Florida, Thursday, November 2, 1967, 10:30 a.m.

I want to thank Frederick Allen for inviting me to your Association's Annual Meeting and for giving me the opportunity to speak to you about the Federal Railroad Administration and some aspects of its work which are of direct interest to you.

As you know, the Department of Transportation became an official part of the Federal Government's Executive Branch only last April. When this occurred, it centralized into one agency the direct responsibility for a wide range of government program in all areas of transportation.

This includes administering the Federal-aid Highway Program, nationwide highway and traffic and aviation safety programs. It includes responsibility for operating the nation's vast and complex air traffic control system and even the U.S. Coast Guard, with all of its navigation and safety functions.

The Federal Railroad Administration has the responsibility within DOT for three railroad-related programs: The Federally-owned Alaska Railroad, which was formerly in the Department of Interior, the Bureau of Railroad Safety, formerly in the Interstate Commerce Commission, and the Office of High Speed Ground Transportation, formerly in the Department of Commerce.

As pointed up by Secretary Boyd two days ago, the Department--in addition to carrying out its direct program responsibilities--was given a broad assignment by Congress and President Johnson: Bring on transportation progress.

In fulfilling this responsibility, DOT thus becomes the focal point for the identification and solution of transportation problems. In doing so, it becomes the asker of questions, a fact-finder, a fact interpreter, an organizer of issues and decision provoker.

The FRA, like the other operating administrations in the Department, plays a dual role in helping the Department fulfill its overall responsibilities. We not only administer the programs now under our wing, but also serve as the focal point for developing positions and proposals as they relate to railroads. Put another way, we provide railroad expertise for the more general problem-solving and problem analysis activities of the staff groups that work under DOT Assistant Secretaries.

With this background, you can see that DOT's special responsibility for raising and exploring questions about the relative role of the various modes and types of transportation goes to the very heart of our involvement in high speed transportation.

This approach can be seen in the way the government is attempting to attack a part of the railroad industry's passenger problem thru our Office of High Speed Ground Transportation.

Our primary concern is with the maintenance of mobility in those densely populated regions of the United States where projected population growth threatens to overtax existing and presently planned transportation facilities within the next twenty years.

But today costs of land and construction for highways in the numerous metropolitan regions are becoming prohibitive. Ground traffic is a nightmare. Automobiles and busses are beset by heavy traffic and frequent stops. At the airports, passengers often face crowds and waiting lines before boarding their plane. On the runways, planes file in lines to wait take-off space. And in the air, flight patterns are often "stacked" waiting until there is room to land.

Our efforts, therefore, are being concentrated, at least initially, on analyses of requirements and evaluation of alternative inter-city transportation systems for the so-called Northeast Corridor region which extends roughly from Southern New Hampshire to Norfolk, Virginia. This most densely populated region of the United States is a commercial center which requires the most sophisticated transportation and communications

systems for continued growth. Within these 40,000 square miles - roughly 1½ per cent of the land area of the United States - lives 20 per cent of our total population.

So from the purely economical standpoint alone, there is an overwhelming need for: (1) developing a better idea of what transportation service the public really wants, and (2) how we should deploy our future transportation investments so as to meet those wants as well as possible.

In this regard, a major thrust of the high speed ground transportation program is an attempt--through research and development--to develop information about the economics and operating characteristics of conventional railroad transportation at speeds higher than those in practice today, using that data to project or forecast what could be done with these higher speeds or even higher speeds tomorrow.

Our high speed demonstration projects between Washington, D.C. and Boston, Mass. and Washington, D.C. and Jacksonville, Fla. are a key step in this direction.

The Washington to New York project--which will cut rail travel time to three hours or less--will begin early in 1968 with brand new multiple-unit coach cars built by the Budd Co. They will be capable of up to 160 miles per hour, although inter-city they will operate at top speeds around 110 miles

per hour. The cars will have luxurious appointments and be equipped with an entirely new in-and-out telephone service.

Preparatory work being done by the Pennsylvania Railroad over whose lines the new trains will run includes a very substantial upgrading of its roadbed, putting in new welded rail, renewing ties and renewing nearly the entire length of the overhead power wires. High-level passenger platforms will be constructed at Washington, Baltimore and Wilmington. At Baltimore, an experimental moving ramp will be installed for easier baggage handling between platform and the station's upper level.

The New York-to-Boston demonstration, although more modest, will utilize two newly designed trains. These will provide 3¼ hour service between the two cities, making two round trips a day each. This equipment--powered by newly designed gas turbine engines and of aluminum construction--will provide an excellent test of the possibility of getting greater speed from existing roadbed without substantial line relocations.

The demonstration between Washington, D.C. and Jacksonville, Florida will test the market potential and operatial feasibility of a long-haul transportation service for automobiles and their passengers in newly-designed rail cars.

Extensive market research and technical development has been carried out in preparation for the project. While both show very favorable prospects for the service, going forward still involves a risk which no private firm up to now has been willing to take. The risk is worth taking for the Federal Government, however, for the transportation investment planning information which can come out of the demonstration.

Hopefully, these three demonstrations will permit some decisions to be made about modification of the existing systems. For one thing, they may show that rail passenger service in certain circumstances can become economically viable.

But just as importantly, the demonstrations will add to our knowledge about the future demand for transportation and gives us some clues on ways to meet it.

In this regard, the Office of High Speed Ground Transportation is also conducting a research and development program designed to advance the state of the art in new systems of ground transportation. Many new systems have been proposed. These include automated highway systems; vehicles travelling in tubes on, above or below the surface; tracked vehicles employing wheels or "sliders" for support and guidance; and vehicles operating on fixed guideways using fluid or magnetic suspension. The question is, which are feasible and how well will each fit the future market for transportation.

Engineering analyses of the key technical features of each system are being conducted to determine whether or not designs are feasible. The overall system operation and its potential role in a regional transportation network will be examined next.

There are other aspects of the research and development effort that bear mentioning. We have let a contract for the construction of a full-scale experimental 2,500 hp linear induction motor. This motor could ultimately permit vehicle weight reductions, and provide much higher speeds than conventional wheeled traction systems. We also have completed advance design studies for a tracked air cushion vehicle, a system with great promise for high speed surface transportation. And finally, its been discovered that lasers can be used effectively to fracture rock, and therefore, offer a new alternative in our continuing search for technological advances which will lessen the cost of tunnel excavation and construction.

Now, in presenting these highlights of the high speed ground transportation program, I certainly don't want to leave you with the impression that we in the FRA and the high speed program are not without problems. For at this stage of the game--even though in some respects we are shooting for the moon in ground transportation--we are still faced with solving some of the cinder-level issues of railroading, not the least of which is the grade-crossing problem.

As most of you know, Secretary Boyd two months ago directed the Federal Railroad Administration and the Federal Highway Administration to initiate a national program aimed at reducing rail-highway grade crossing hazards and accidents. He also directed that special consideration be given to grade crossings in the heavily travelled Northeast Corridor.

I do not think there is any disagreement that grade crossing safety is a national problem. One only has to look at the accident statistics that come in month after month and the headlines on the front pages whenever a schoolbus driver fails to stop.

Recognizing the problem but only shaking our heads in sorrow is not going to help the situation.

In this regard, the grade-crossing action committee of the Federal Railroad Administration and the Highway Administration has been making a preliminary investigation into the matter for a little over a month. They have been able to pinpoint certain problems which I would like to pass on to you:

-- The present highway warning signs--where they exist at all--are usually based on automobile speeds of the 1930's.

-- A large number of motor vehicles are hitting trains or lowered gates, indicating a need for more effective warning systems and signs away from crossings.

-- Railroad grade crossing signs are crowded by highway regulatory and information signs; this problem is magnified in urban areas.

-- Most crossings are not on Federal-aid highways, so they are usually ineligible for Federal assistance. Although not verified, statistics point to the fact that the majority of grade-crossing mishaps are at non-Federal aid highway crossings.

-- A point not generally understood by the public is that approximately 75% of the accidents occurring at grade crossings do not involve a train-car collision. They are such accidents as cars slamming into stopped trucks or other cars, careless motorists skidding into lowered crossing gates and autos colliding with permanent crossing structures. For example, of the estimated 14,000 grade crossing accidents in 1965, less than 4,000 involved trains.

If these findings tell us anything, they serve to point up that we desperately need help at the State and local level. This is why I recently sent a letter to all Commissioners asking

for your assistance. And this is why I thought it important enough to bring the matter to your attention today.

We recognize that Public Utility Commissioners are leaders in most states in grade-crossing safety. We also recognize that your experience and informational resources are vital if we are going to devise a truly effective program.

A good idea of what Federal-State cooperation can accomplish is seen in the Washington to New York high speed demonstration project I mentioned earlier. On this 225-mile span of track, there are 23 public crossings. To date two have been closed, one will be closed prior to starting the service, and protection at the remaining 20 has been upgraded by installing lights and gates where they were not present before. Additionally, track circuits have been repositioned to provide 30-second warning signals, and we are now in the process of looking at the advance warning signs and systems at each crossing.

Hopefully, we are entering an era of high speed train service. We are already well into the age of excessive auto speeds. The two serve to point up the urgency of all our efforts to move towards an effective means of reducing the number of grade crossing accidents.

I sincerely hope you will join us to this end.