

# I.C.C. Holds Signal Hearing

IN CHICAGO on September 29, the Interstate Commerce Commission, before Commissioner W. J. Patterson and Examiner E. J. Hoy, opened a series of hearings of the petitions by six railroads for relief from compliance with the signaling order issued by the Commission on June 17. In brief, this order requires the railroads to install block signaling on lines not so equipped, on which freight trains are operated at 50 m.p.h. or more, or passenger trains at 60 m.p.h. or more; and additional protection in the form of automatic train stop, train control or cab signaling, where trains are operated at 80 m.p.h. or more. Some 28 or more roads have submitted petitions for relief from the order, but only six were heard at the sessions starting on September 29. These included the Great Northern, the Union Pacific, the Southern Pacific, the Western Pacific, the Burlington and the Santa Fe. These roads are named in the order in which they presented their cases at the hearing. The hearings extended from September 29 to October 3, inclusive, with three evening sessions. Time was not available to hear the Rock Island and the Chicago & North Western, and, therefore, the hearings are scheduled to be resumed on November 17, to hear the cases of these two roads.

## Importance of Cases

The importance of these hearings was evident from the fact that the railroads presented numerous witnesses including not only engineers, road foremen of engines, and signal engineers, but also division superintendents, general managers, general passenger traffic managers and vice-presidents. The petitions were protested by various railroad labor brotherhoods which were represented for the most part by H. C. Heiss, attorney for the Railroad Labor Executives Association. Commissioner Patterson and Examiner Hoy reviewed the exhibits and asked numerous questions to bring forth information for the record.

The tabulations of costs for signaling to comply with the order were submitted as exhibits by the railroads. The Santa Fe operates trains at more than 80 m.p.h. on 6,188 mi. of track involving about 1,200 loco-

Some railroads agree to install automatic train stop or cab signaling on some sections but on other sections they want to run trains above 80 m.p.h. without this additional protection

motives in operation on these territories. The estimated cost for installing automatic train stop is \$8,235,028; for two-indication cab signaling \$26,778,463; and for automatic train control \$32,072,563. G. K. Thomas, signal engineer of the Santa Fe, testified that these were fair figures.

## What They Asked For

None of the six railroads heard at these sessions asked to be excused from installing a block system on lines not now so equipped, but rather the petitions were for permission to operate trains at speeds greater than 80 m.p.h. on certain sections of line, without being required to install train stop, train control or cab signaling in addition to existing automatic block.

As the hearings developed, some railroads made important changes in their petitions. For example, the Burlington, which earlier had petitioned for exemption from the order, came into the hearing with an explanation that a decision had been made to install continuous two-indication cab signaling between Chicago and St. Paul, and between Chicago and Omaha. The Burlington case, therefore, had to do primarily with the request to operate the Denver Zephyr trains at speed of more than 80 m.p.h. on the 440 mi. between Lincoln, Neb., and Denver, Colo.

In presenting its case, the Union Pacific stated that plans are under way to install two-indication continuous cab signaling on 993 mi. between Omaha, Neb., and Ogden, Utah, this including replacement of obsolete cab signaling on 225 mi. between North Platte, Neb., and Cheyenne, Wyo. This road, however, requested permission to operate its streamlined passenger trains at speeds in excess of 80 m.p.h., up to and including 90 m.p.h., on certain other sections of line without adding cab signaling to the existing automatic block and centralized traffic control. These sections are: Jules-

burg, Colo., to Denver, 197 mi.; Pocatello, Idaho, to Huntington, Ore., 336 mi.; and Ogden, Utah, to Los Angeles, Cal., 821 mi. Only one streamlined train is operated each way daily over any of these three territories.

The Southern Pacific requested permission to operate the "City of San Francisco" each way daily between Ogden and the vicinity of San Francisco at speeds of up to 90 m.p.h., without being required to install train stop, train control or cab signaling. The Western Pacific is involved in this operation on paired track between Winnemucca, Nev., and Wells, about 183 mi.

The Santa Fe explained plans to install intermittent train stop on those sections of line between Chicago and Los Angeles on which certain trains such as the "Super Chief," "Chief," and "El Capitan" are operated at speeds of more than 80 m.p.h. Also the proposal is to install train stop equipment on only those locomotives used on the streamlined trains operated at more than 80 m.p.h. The Santa Fe asked for permission to operate certain trains at speeds up to 90 m.p.h., without being required to install train stop, train control or cab signaling. These requests apply to the "Golden Gate" trains between Barstow, Cal., and Mojave, and between Bakersfield, Cal., and San Francisco, as well as the "San Diegan" on certain sections between Los Angeles and San Diego.

## Great Northern Request

The Great Northern requested permission to operate its "Empire Builder" trains at speeds up to 85 m.p.h., without installing additional protection on three sections of line: 182 mi. between Long Lake, Minn., and Breckenridge; 189 mi. between Nolan, N. D., and Minot; and 25 mi. between Lyons, Wash., and Canby.

Thus with the exception of certain phases of the Santa Fe case, the hearings had to do primarily with the requests to operate trains at more

than 80 m.p.h. without installing cab signaling, train control or train stop.

The problems of railroad management in financing the installation of additional protection such as train stop, train control or cab signaling, in coordination with programs of other improvements to insure safety of train operation, were presented by certain railroad officers as witnesses. These included G. H. Minchin, vice-president, operation, Santa Fe; H. C. Murphy, vice-president, operation, Burlington; J. W. Corbett, general manager, Southern Pacific; P. J. Lynch, vice-president, operation, Union Pacific; and M. J. Welch, general manager, Great Northern. The statement by Mr. Minchin covers 25 typewritten pages and is accompanied by numerous tabulated exhibits and maps, dealing with the money spent and being spent for railroad equipment, tracks, bridges and signaling. Also accident records are dealt with in detail. His more important points are summarized in the last three paragraphs of his statements which are as follows:

"In my opinion this accident record clearly shows the inadvisability of requiring a railroad to make excessive expenditures for signaling devices to prevent collisions which have not been occurring during a long period of operation at higher speeds. As I have stated before, we must make heavy expenditures each year, not only to provide signal protection, but in keeping our roadway and track in safe condition, and to provide the most modern and safe equipment. Unwarranted expenditures in one field necessarily force us to curtail needed expenditures in other fields, because, after all, all these expenditures must be provided from the earnings of the railroad.

"We feel that the public and employees are entitled to the best practical protection, and this includes proper signal protection as one of the items. In considering safe operation, we have, to our best judgment, taken into consideration the many other things that affect safety, such as sturdy track—keeping it in perfectly safe condition, including bridges of proper construction, proper weight of rail, good ties, ballast, etc. It includes taking into consideration the proper protection of the more heavily traveled highway crossings, also includes the well designed, properly maintained locomotives and cars, as well as men who know and properly observe the rules. I think we must also recognize that there is no such thing in life as absolute safety; there is a hazard about our mere existence, and there is a hazard in everything

we do. In conducting our business, therefore, we must take into consideration all of the forces with which we are dealing, and strive for a very high degree of safety.

"This also brings into sharp focus the balancing of one factor against the other, to arrive at the best possible conclusion. I feel it will be quite evident from the information I have furnished here that the Santa Fe has been measuring up to its responsibility in providing safe operation for both employees and the public."

### Serving the Public

As applying to the several long-distance streamlined trains operated between Chicago and cities on the West Coast, the contentions of the passenger traffic managers, as witnesses, were to the effect that any lengthening of the schedules would cause serious complaint by the public. The departures and arrivals of these trains are planned so that passengers can save a business day as compared with previous schedules. If the train speeds must be reduced to an absolute maximum of 79 m.p.h. in order to avoid the expense of installing train stop, train control or cab signaling, the schedules would have to be lengthened, thus in some instances resulting in mid-forenoon arrivals instead of early morning. The railroads contended that 1 hr. 30 min. to 2 hr. 30 min. additional time, depending on distances involved, would be required if the top train speeds were held to 79 m.p.h. Commissioner Patterson contended that these figures were high. He stated that representatives of the Commission had been sent out on the roads involved to check the OS time at stations as recorded on the train sheets. Based on this data, he stated the locations of sections on each railroad where the average overall speed as shown by OS reports would be indicated as more than 80 m.p.h. and he stated the time that would be lost in each instance if the speed were reduced to less than 80 m.p.h. As applying in each case, the aggregate time as calculated by the Commission was much less than that stated by the railroads.

As applying to the 440 mi. on the Burlington between Lincoln and Denver, Commissioner Patterson told Vice-President Murphy, of the Burlington, that the Commission people figured that the Burlington need not lose more than an aggregate of 21 min. if the top speed is reduced and that, in the opinion of the Commission, the Burlington could absorb this and thereby not lengthen

the schedule. Mr. Murphy explained that careful investigations had been made with the conclusion that the schedule time cannot be made with a top speed of 75 m.p.h. but that the schedule would have to be lengthened about 1 hr. 30 min. to allow for unexpected delays, and thereby insure on-time performance for arrival at terminals. He explained that a figure for average speed between stations based on train sheet records does not take into consideration that the speed on parts of the section may be lower due to curves or other conditions, and accordingly the speed must be much higher on the remainder to bring up the average. Mr. Murphy stated that if the top speed is 90 m.p.h. as compared with 75 m.p.h., a train would save 8 sec. per mile. The track is such that, if time is needed, a Zephyr train can safely be operated at 90 m.p.h. on 85 per cent of 440 mi. of the line between Lincoln and Denver, thus saving about 49.9 min. Finally Mr. Patterson agreed that, as a practical operation, the time would be lengthened about 1 hr. if the top speed were limited to 75 m.p.h.

When discussing similar matters as applying to the Santa Fe, Mr. Minchin stated that he had run a test. On a certain date the speed of the "El Capitan" train between Chicago and Los Angeles was controlled carefully so that it did not exceed 79 m.p.h. The train arrived in Los Angeles 2 hr. 17 min. late. Based on this experience, Mr. Minchin said that if the maximum speed over this route is limited to 75 m.p.h., the schedules of the "El Capitan" and the "Super Chief" would have to be lengthened 2 hr. 30 min. or perhaps 2 hr. 45 min.

Commissioner Patterson made a suggestion which was to the effect that if the railroads did not want to let their trains arrive at destinations an hour or so later, they could start them out of Chicago, for example, an hour or so earlier and thus allow for the loss of time which might be occasioned by adhering to a top speed of 79 mi. rather than 85 to 90 m.p.h. In answer to this, the passenger traffic managers, as witnesses, contended that the departure times were determined on the basis of greatest service to the public with respect to business day time, connections with other railroads and efficient handling of mail.

### Need for Additional Protection

H. C. Murphy, vice-president, operation, on the Burlington, when on the stand as a witness, stated: "While this order seems directed to

so-called highspeed trains, it has not been our experience that speed is a dominating factor in train accidents—it may influence the results but it is not in and of itself the cause of accidents of a type this order presumes to prevent. From November 11, 1934, when the Pioneer Zephyr was first installed between Lincoln-Omaha and Kansas City, until the present time, Burlington has operated over 30 million Zephyr miles and in no instance has one of these trains collided with or run into the head end or rear end of any other train. The exhibit shows all accidents to such high-speed Zephyr trains since they were put in service, none of which could have been avoided by automatic train control, train stop or cab signals.”

G. H. Minchin, vice-president of the Santa Fe, stated that: “Studies we have made of our own operations raise serious doubts as to the need for any such additional protection [train stop or cab signals]. A study was made under my supervision and direction of all reportable main-track collisions from January 1, 1937 to August 1 of this year, covering the period of higher-speed operation on our main passenger lines where installation of automatic train stop is contemplated. This study covered specifically all streamlined trains which have operated in this territory during that period. These trains operated a total of 34,485,241 train miles during this period of approximately 10½ years. There was only one so-called train collision reportable to the Interstate Commerce Commission during this entire period, and it did not involve a collision between two trains. This was an accident where a piledriver, operating on the adjacent track, swung its leads immediately in front of the approaching train and could not have been prevented by any signaling device. The only casualty as a result of this accident was an injury to one employee.”

When J. W. Corbett, general manager of the Southern Pacific, was on the stand, he was questioned by Burton Mason, attorney for the railroad and by Commissioner Patterson, quoted verbatim as follows:

Q. (By Mr. Mason): Mr. Corbett, is there any additional safeguard contributed by a train stop with respect to operation at speeds of 80 or more miles per hour which is not present at the lower speeds?

A. (By Mr. Corbett): I don't think there is. If there is, it is negligible.

Commissioner Patterson: As I stated this morning, we may have put the wrong figure in. We maybe should put in 60 instead of 70. (Rec-

ord shows figure 70 which obviously should be 80.—Editor).

Q. (By Mr. Mason): Assuming automatic train stops result in greater operation of safety at less than 60 m.p.h., does it lend any additional safeguard where the speed of one or more trains in the district is 60 or more miles per hour.

A.: In my opinion, no.

Commissioner Patterson: Wouldn't it shorten this up if you would ask the witness whether he thought the introduction of a cab signal, a train stop or train control did add a certain element of safety to the train, regardless of the speed?

A.: There is no question but that the introduction of cab signals or automatic train stop, particularly the first, adds somewhat to the safety of operation. Of course, there are many other refinements which add to the safety of operations, and there is a very practical problem posed as to which or how the available funds for such improvements will be expended.

Commissioner Patterson: That is right, and when you get to the final analysis here, it is a question of whether you should determine how those funds should be used or whether the government should, isn't that right?

The Witness: Of course, if you wish my opinion on it, I will certainly say the the decision should be left with the management, because I think we have demonstrated our desire to, as it is possible to do so, to surround our operations with every possible safeguard, and I further think that we who are responsible for the management have just as great or greater interest in protecting the safety of our operations as the Commission, with all due respect to the Commissioner.

Commissioner Patterson: That is right. That is a real question. And hasn't Congress given the Commission that responsibility to this case?

Q. (By Mr. Mason): Now, to return to the Commissioner's question previous to our reference to the Gold Run-Truckee installation, will you state whether or not it is your opinion that the installation of automatic train stop, train control or cab signals is largely independent of the maximum authorized speed, other considerations being more important?

A.: Yes.

Commissioner Patterson: Yes. It gets right back to the point as to who is going to decide the importance of these things.

Mr. Mason: I think in order to get our record straight, while it is true, as Mr. Corbett indicated in answer to one of your questions, that Congress has given you, under the Signal In-

spection Act, Section 25, certain responsibilities in connection with the safety or the degree of signal installations required, that the prime and ultimate responsibility is still with the management. Yours is a supervisory or visitorial jurisdiction and not a jurisdiction which entitles you to substitute your judgment in the operation of the railroad for that of the responsible owners.

Commissioner Patterson: I do not want to argue a legal question with you, but if our responsibility—if we are going beyond our authority here, why, you watch that and see that we don't do it, won't you?

P. J. Lynch, general manager, Union Pacific, when on the witness stand, was questioned by F. J. Melia, attorney for the Union Pacific, and by Commissioner Patterson, quoted verbatim as follows:

Commissioner Patterson: Do you think that the speed of the train has any influence upon the likelihood of man failure? Now, for instance, do you think that a man operating a locomotive at 90 m.p.h. is more likely or less likely to miss a signal or misinterpret a signal, than a man operating a train at 40 m.p.h.?

Mr. Lynch: I would say that a man operating a train 90 m.p.h. on Diesels has got an absolutely unobstructed clear vision ahead of him. I think that a man operating a streamlined train has got a greater sense of responsibility, and I think he just inherently feels that he has got to do a little better job. I do not think that he is going to miss any signals. I have never heard of it. I don't see how he can. I heard testimony about running blind and running by a watch, and losing the landmarks, but I just don't believe that happens. These fellows that have been on the railroad for 35 to 40 years, they don't take their lives in their hands and run blind on a streamline train. A fellow with a clear shot at it, he just does not miss a signal. And I say that a fellow on a streamlined train is no more likely to have an accident, or the hazard of an accident, at 90 m.p.h., than a fellow on a steam engine at 65 m.p.h. I make it a practice to ride the head end of a train, either steam or Diesel, every time I go out on the line, and I know a little something about it.

### Observation of Signals

With certain minor exceptions, the territories under discussion on the roads involved are on single track, equipped with automatic block and in some cases with centralized traffic control superimposed on the automatic block controls. In most instances the signals are of the color-

light types. Therefore, much of the discussions and questioning as to the need for train stop or cab signaling had to do with the observation of wayside signals by enginemen. When each railroad presented its case, witnesses for the carrier testified concerning weather conditions, snow, fog and wind on the territories involved. These witnesses read rules applying when weather conditions were adverse. For example, J. W. Corbett, general manager of the Southern Pacific, read their rule as follows:

"All trains must run carefully during and after heavy storms particularly when the track is apt to be affected. When fog, storms or other conditions obscure tracks or signals, speed of trains must be so reduced as to permit strict observance of signals and insure absolute safety regardless of time."

On the other hand, the witnesses for the brotherhoods stated that in certain territories wet snow would accumulate and freeze on the roundels of color-light signals, and also that during certain seasons and on some territories, dense fog occurred.

As applying to the Union Pacific, L. D. Dickinson, general signal engineer, testified that during the last few years, 24-in. hoods had been applied to replace shorter hoods on all light signals on the Union Pacific, and that since the 24-in. hoods have been in service, no complaints have been received concerning snow or ice on the roundels. He was certain that if any such complaints had been made they would have come to his attention. When testifying for the Southern Pacific, R. D. Moore, signal engineer of that railroad, stated that the light signals on his railroad are the searchlight type and are equipped with 24-in. hoods.

As described by witnesses of the railroads, the density of fogs on the various territories ranges from light high to light low fogs, whereas as described by witnesses of the brotherhoods the fogs are as dense as pea soup. The statements made about fog during these hearings would fill a book.

### Is C.T.C. Safer?

On the Union Pacific, centralized traffic control is in service, under construction or authorized on the lines between Salt Lake City and Los Angeles as well as between Pocatello and Huntington, these being the major portions on which the railroad petitioned for permission to operate trains at more than 80 m.p.h. without installing cab signaling. Also on the Burlington the

entire territory between Lincoln and Denver is equipped with centralized traffic control.

H. C. Murphy, vice-president, operation, of the Burlington, testified that: "We believe the C.T.C. system presently in use between Lincoln and Denver wholly adequate and this is justified by our experience with the operation of high-speed, lightweight trains from 1934 up to now. Furthermore, we believe centralized traffic control to be one of the safest, if not the safest, form of train control in that it reduces the chances for human error to a minimum. It is self-policing—by that I mean the dispatcher, and in turn the superintendent, knows more about what a train is doing under the C.T.C. than he does from any other form of dispatching. One reason it is self-policing is because the running of a 'Stop' signal is recorded on the train graph, and the dispatcher knows about it instantly. The fact that signals constitute sole authority to occupy the main track compels a high degree of respect for signal indication. I do not recall a single train accident on the Burlington as the result of an engineman running a 'Stop' signal in centralized traffic control territory."

### Safety Features

A. L. Essman, signal engineer, system, on the Burlington, as a witness was asked the question: "What are the safety features, if any, of this centralized traffic control system?" Mr. Essman replied as follows:

"There are reduced hazards of personal injuries to train crews because of power-operated switches which make it unnecessary to run ahead of a train to open switches or to run and board the train after closing the switch.

"Centralized traffic control reduces the possibility of accidents resultant from break-in-two's on account of not having to stop and start as frequently because of siding switches being operated.

"Centralized traffic control provides the dispatchers with facilities to hold trains at any of the controlled signals should the occasion arise to hold such trains.

"The automatic traingraph provides an accurate record of each train's performance, such as speeds between fixed points, time of passing fixed points, observance of every controlled signal. The train and enginemen have been schooled in regard to the information recorded on the automatic traingraphs and are aware of the fact that their train is making such a record, consequently

the observance of all signal indications and operating rules is the result."

When R. D. Moore, signal engineer of the Southern Pacific, was on the stand, he was questioned by Burton Mason, attorney for the railroad, and by Commissioner Patterson concerning train stop, quoted verbatim:

Commissioner Patterson: Will you continue to use that same National automatic train stop system if you decided to put in additional protection more than wayside signals? Is that what you would select?

Mr. Moore: I think we would, yes, sir.

Commissioner Patterson: Would the suppliers supply anybody but you with these parts; you are their only customer?

The Witness: The Alton, I believe, has a small amount.

Mr. Moore: The upper part of the exhibit is an estimate for three-indication cab signals between Sparks and Ogden.

Q.: And that is the same territory covered in the lower part of exhibit number 406, is it not?

A.: Yes, sir.

Commissioner Patterson: The east end of your line you are sort of going modern on, but you are keeping the obsolete devices on the west end, is that about what it amounts to?

Mr. Mason: Mr. Commissioner, if this were anything other than this proceeding I think I would object very strenuously to the word "obsolete." The device conforms to the Rules, Standards and Instructions.

Commissioner Patterson: And I will admit on or off the record that the Rules, Standards and Instructions are more or less obsolete. So we are together on that.

Mr. Mason: I do not admit that they are. I think they represent a very considerably modern trend.

Commissioner Patterson: As compared with 1914.

### Other Considerations

During the hearing of each case, Commissioner Patterson asked for information concerning various matters. For example, he inquired concerning the design and operation of the electro-pneumatic brakes on the streamlined trains. Various witnesses presented charts and data to show braking distances of trains. Questions were asked concerning methods used to inform operators of track motor cars concerning the locations of approaching trains. These matters are mentioned here so that readers who are especially interested in these subjects can refer to the stenographic minutes of the hearings.