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STREAMLINE, LIGHT-WEIGHT,
HIGH-SPEED PASSENGER TRAINS
OF
SEABOARD AIR LINE

FEBRUARY 2, 1939 TO MARCH 31, 1945

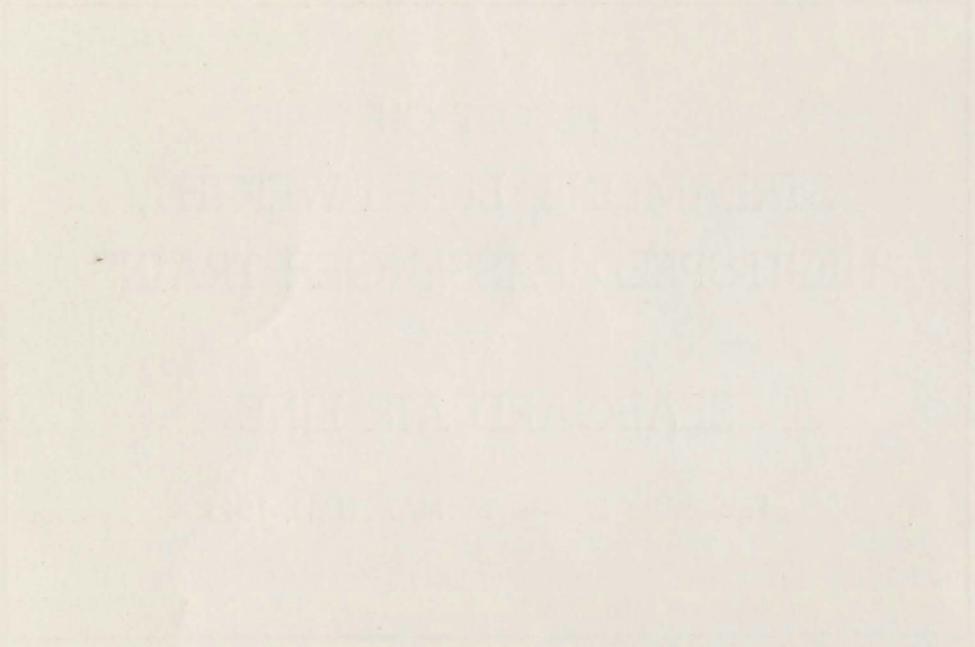
COVERDALE & COLPITTS
CONSULTING ENGINEERS
120 WALL STREET, NEW YORK



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WATERBURY & COMPANY
Manufacturers of
SPECIALTY PAPER

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FOREWORD

WE have prepared reports on streamline, light-weight, high-speed passenger trains at various times in the past, the last one for the two-year period ended June 30, 1941. These reports were widely distributed and were generally regarded as informative in respect of such matters as the public appeal of the trains, their gross earnings, cost of operation and net return.

Throughout the period since the last report was issued the man-power situation on the railroads has been such that many lines have been obliged to discontinue recording the results of operation of streamline trains apart from those of standard equipment. As a consequence, during that time it has not been possible for us to issue reports covering the streamline train operations of a group of roads as we have done heretofore.

Now that the war has ended, restrictions upon construction work of many kinds are being lifted and railroad managements are planning, in the shortest possible time, to make good the wear

and tear caused by the unprecedentedly heavy traffic of the war years, both of track and equipment, so as to place themselves in favorable competitive positions in the postwar period. Not the least of the measures they are studying with this end in view is the much more general substitution of modern streamline passenger trains for the present outmoded equipment of conventional heavy type now in service.

We believe the time is favorable for such substitution. The new type trains operating at high speed have fully demonstrated their popularity with the traveling public which, through wartime necessity, has again in some degree become railroad minded. At the same time the railroads, by means of their large earnings of the war years, have been able greatly to strengthen their financial structures and now are well able to make the necessary expenditures for new facilities of any nature that will improve their service to the public and provide a satisfactory return.

Since the figures are unobtainable for a report on the streamline train operations of a group of roads it has seemed desirable, in the interest of all lines now facing the problem of providing new modern equipment for their higher class passenger services, to present in more detail than would otherwise be done a report of the results achieved by one line with these trains. We have for that purpose selected the Seaboard Air Line, first because it has kept certain separate

records of the operations of its streamline trains, the SILVER METEORS, throughout the war period and, second, because its experience with them has been extensive, covering a period of approximately six years.

This report, therefore, will deal particularly with the development of streamline train service on the Seaboard, which line was the first to introduce these trains in southeastern territory—in 1939.

BRIEF HISTORICAL SKETCH OF STREAMLINE TRAIN DEVELOPMENT

DUE largely to the automobile and improved public highways, the travel customs of the people of the United States and Canada altered materially during the years intervening between the first and second world wars. This change was reflected in a steady decline in passenger miles and revenues on all lines throughout the period. On the other hand, business activity was generally on a high level during the 1920's and the freight traffic of the lines, despite the growing inroads of trucks, expanded to the largest volume in their history. But with the advent of the great depression in 1930, railroad earnings, both passenger and freight, suffered a sharp recession which continued in subsequent years to the point where many of the lines, constituting about one third of the mileage, found it necessary to seek refuge in receivership. The Seaboard was one of these, passing into the hands of the Court in December, 1930.

The first reaction of railroad managements to the decline in passenger traffic was to reduce the expenses attached to the movement, and the early experiments in producing economies were directed toward eliminating or shortening light traffic trains or substituting gasoline-electric motorcars for steam trains. While these motorcars realized operating economies, neither the service

they provided, the speed at which they operated, nor their travel appeal acted to restore an appreciable volume of traffic to the rails. It may be said, however, that it was through knowledge gained in the operation of these motorcars that the potentialities of the internal combustion engine for railway use came to be understood and resulted in the development of the Diesel-electric engine that supplies the motive power for many of the streamline high-speed trains now running on many roads.

A new development that has been of great aid in recent years in popularizing railroad travel is air conditioning.

The date when air conditioning was first introduced in railway passenger cars is somewhat vague. It would appear that the first car so equipped was in 1929, followed in 1930 by an installation in two dining cars and later in a whole train of seven cars—the COLUMBIAN of the Baltimore & Ohio. By 1932, air conditioning had been installed in over 300 cars of various types. Up to 1942, when the Government prohibited the manufacture of railroad passenger cars, over 13,000 sleepers, parlor cars and coaches had been air conditioned, including cars of most of the principal lines in the United States and Canada.

The innovation was an instantaneous success in that it surpassed any other

single agency in promoting travel comfort. More than any other recent development it served first to point the way toward arresting the passenger traffic decline on the railroads and then to assist in regaining a measure of the favor of the traveling public they formerly enjoyed.

The air conditioning of railway cars has permitted the introduction of many other striking travel-appeal innovations in respect to the use of new materials and new conceptions of design in the interior decorative treatment, for in sealing the cars air conditioning banished the obstacles which smoke, dust and cinders had placed in the way of employing attractive color tones, mural paintings, fine draperies and pleasing lighting effects.

On November 11, 1934, the first regularly scheduled streamline, light-weight passenger train, the PIONEER ZEPHYR, was placed in operation on the Chicago, Burlington & Quincy between Kansas City, Missouri, and Omaha-Lincoln, Nebraska. It was built by the Edward G. Budd Manufacturing Company, of stainless steel, powered by a Diesel-electric 600 HP unit, air conditioned, the interior decorated in the modern style and provided with many new travel comforts and conveniences.

This train and one other, the CITY OF SALINA of the Union Pacific, may be said to have revealed the form of things to come in the way of railway passenger equipment and service. While only 3-car

trains of sub-standard dimensions, with the power unit housed in the forward car, they nevertheless were responsible for setting the pattern of streamline train philosophy that since has been more or less generally followed. Both trains disclosed the influence of the automobile and airplane in their air-flow lines and in the fact that they were built as light as the safety factor would permit so as to minimize the power requirements for high speed.

The public reception of the PIONEER ZEPHYR was most gratifying both to the Burlington and the Budd Company. The train is now nearly eleven years old and still is operating in regular service. Though entirely outmoded in the light of subsequent improvements, it was instrumental, as the evolution proceeded, in proving the soundness of the basic principles of design and decoration and of the use of stainless steel as the strongest and longest-lived structural material and protective covering for cars of standard dimensions to operate at high speed in long trains on long runs at high availability.

The City of Salina paralleled the Pioneer Zephyr in design and appointments, and in the first stages of this development contributed heavily toward publicizing and popularizing the new railroad vehicle. It was a 3-car Pullman-built aluminum alloy train, sub-standard in size and powered by a 600 HP oil-electric unit. The train's initial try-out

was an extensive exhibition tour of the country, after which it was placed on view at the Century of Progress (World's Fair) in Chicago. Both on its tour and at the Fair it attracted wide attention and won extraordinary public acclaim. It was installed in regular service on the Union Pacific between Kansas City, Topeka and Salina on January 31, 1935. On December 16, 1941, it was withdrawn from service and dismantled.

A pair of streamline trains, the REBELS of the Gulf, Mobile and Ohio, were the first of the modern type to be built by the American Car and Foundry Company. They are 3-car corten steel trains of less than standard dimensions, powered by 660 HP Diesel-electric locomotives and were placed in service between New Orleans, La. and Jackson, Tenn., on July 29, 1935. The trains have been remarkably successful, both from the standpoint of public acceptance and earning power and, after ten years of service, still are operating on regular schedules.

These trains, the Pioneer Zephyr, the City of Salina and the Rebels, represented the initial contributions to the art of streamline train design and construction by the three largest car builders in the country—the Edward G. Budd Manufacturing Company, the Pullman-Standard Car Manufacturing Company, and the American Car and Foundry Company. Since the advent of these introductory trains, each manufacturer has greatly improved the structural design, manu-

facturing technic and decorative treatment of the cars and has added numerous new features for increasing the pleasure of travel by train.

During the ensuing four years, that is from 1935 to 1938, there were placed in operation on different roads, exclusive of individual cars, 51 trains, of which 46 were light-weight trains varying from 3 to 14 cars, and 5 were semi-lightweight.

From 1939 to 1942, 57 light-weight and 2 semi-lightweight trains were placed in service. In the latter year, war restrictions were imposed and since then no new passenger cars of the modern type have been built.

Now, in 1945, after the passage of a decade since the Pioneer Zephyr was placed in service by the Burlington, we may well ask if the streamline, light-weight, high-speed railway passenger train has been justified as a new railway merchandising medium. Judging from the widespread interest the subject has aroused on the part of railway managements and the public generally, by the tangible evidence of increased patronage and high train-mile earnings, by the rapid increase in the number of streamline, light-weight cars built and placed in service up to the time the necessary materials and man-power for their construction were diverted to war needs, and by the large number of orders received by manufacturers during the war period, the answer is emphatically in the affirmative.

Though deliveries cannot be made at the present time, many unfilled orders for streamline trains are on the books of the manufacturers and many more are in the offing. When labor and essential materials are fully available for the purpose, we predict that modern passenger trains will be built in much larger numbers than in the prewar period, and this will play an important part in our postwar economy.

While not pertinent to this report, it may be said here that railroad managements in quickly recognizing the many advantages from a public appeal and operating standpoint attaching to these new streamline, light-weight, high-speed trains, and in installing them in large numbers in the prewar period, have greatly aided the war effort and have delayed the time for placing war restrictions on civilian travel.

FLORIDA PASSENGER TRAFFIC

In the past twenty-five years the State of Florida has grown rapidly in popularity as a winter resort, and the accommodations for visitors have kept pace with their increasing numbers. But until recently the cost of a vacation in Florida including long distance train fares has been prohibitive for people of limited means. The introduction of the streamline, high-speed all-coach trains, which offer the traveler luxurious accommodations at low rates, has without doubt made it possible for a much larger segment of the public to vacation in the South.

Immediately prior to the War, the summer or off-season passenger traffic to Florida, stimulated by the streamliners and by all-expense tours, had grown so greatly as to impel many hotel managements to offer patrons rates that were reduced to a level to cover little more than the out-of-pocket costs, thus permitting all-year operation and obviating the difficulty and expense incident to closing the establishments in the spring and reopening them in the autumn. It would appear that, as this policy is more generally adopted, the Florida vacation season will be still further lengthened which in turn will become a source of additional traffic for the railroads serving the state.

These luxurious all-coach, high-speed trains had received such emphatic public approval, first in the West and later in

the Southeast, that shortly after the installation of the SILVER METEORS by the Seaboard other lines acquired similar trains for the Florida travel.

The first of these was two 7-car trains purchased by the Atlantic Coast Line and two of 7 cars each by the Florida East Coast, all Budd-built. Three of these trains, christened the CHAMPIONS, were placed in daily service on December 1, 1939, between New York and Miami, via the Atlantic Coast Line and the Florida East Coast. Later each was increased to 14 Budd-built cars. The fourth 7-car train, named the HENRY M. FLAGLER, commenced operation on December 3, 1939, making a daily round-trip on the Florida East Coast between Jacksonville and Miami.

The Florida East Coast and the Atlantic Coast Line, together with associated railways, recently have placed additional orders with the Budd Company for 59 streamline, light-weight cars for operation between New York and the South, to be built as soon as labor and materials are available.

While there are no statistics from which to gauge with any degree of accuracy the extent to which the Florida vacation travel may grow, those of the 16th United States Census (1940) indicate that the number of people living in the eastern seaboard states between Maine and Maryland to whom low vacation costs and low cost deluxe travel

service would appeal is very large and constitutes a great traffic reservoir still further to be tapped by informative advertising in the postwar period.

The foregoing discussion refers particularly to the vacation travel to Florida, but attention should be drawn to the fact that this class of traffic is by no means wholly southbound. A considerable volume of vacation travel also moves northbound during the summer season which has tended to stabilize the movement on the streamline trains throughout the year.

Although the Seaboard and Atlantic Coast Line in normal times carry a large number of vacationists to and from Florida and other southern points, nevertheless the principal portion of the traffic of these lines is that which moves between the important industrial and agricultural areas served by them and the great metropolitan centers of the North and East.

The war effort has spurred the industrialization of the South through the establishment of many new plants making diversified products, and these have brought better working conditions and living standards to large groups of workers. With immense resources awaiting development it cannot be doubted that this industrialization will continue in peacetime. It is equally certain that the results will be beneficial to the railroads through expansion of their traffic, both freight and passenger.

The installation of the SILVER METEORS of the Seaboard and the CHAMPIONS of the Atlantic Coast Line was followed by orders for equipment to provide an entirely new daily service with all-coach, light-weight, 7-car trains between Chicago and Florida. This service commenced on December 17, 1940, and alternated between the DIXIE FLAGLER on the Chicago and Eastern Illinois, the CITY OF MIAMI on the Illinois Central, and the SOUTH WIND on the Pennsylvania. The City of Miami was Pullman-built. The trains for the other lines were Budd-built, the Dixie Flagler being the former Henry M. Flagler. When these Chicago-Florida trains were first installed it was the intention to operate them only during the winter season, but their patronage soon grew to the point that justified their continuance throughout the year.

It early became apparent to the lines operating streamline trains, whether serving vacation resorts or otherwise, that the improved service induced patronage from all classes of travelers. The results obtained with modern passenger equipment by the Burlington, Milwaukee and North Western between Chicago and the Twin Cities, while extraordinary when viewed in the light of the traffic of the pre-streamline train period, are in fact typical of those of many other lines which do not reach national vacation resorts.

The modern coach car, in particular, with its exceptional facilities designed to

promote the comfort, convenience and pleasure of passengers, and with its low travel costs and democratic atmosphere, has greatly broadened the field throughout every section of the country from which railroad passenger traffic may be drawn. One road, the Minneapolis & St. Louis, which had largely discontinued its passenger services, has placed orders for Budd streamline trains in the belief that thereby it will recapture a portion of its former passenger business and at the same time promote favorable relations with shippers. It would seem to us that it is through the extension of these

luxurious, low-cost services that the railroads may expect the greatest increment of increase in passenger traffic and revenues.

Every approach to the subject by both car manufacturers and railroad managements is in the direction of providing more comfortable accommodations and eye-appealing appointments with the purpose of making train travel a pleasant experience. The new sleeping car—the Budd cabin car—is an example of the efforts now being put forth to attain this end.

The first part of the book deals with the early years of the Republic, from the signing of the Constitution to the end of the War of 1812. It covers the political and social changes that shaped the young nation, including the struggle for federalism and the rise of the Federalist Party.

The second part of the book focuses on the period from 1812 to 1848, a time of rapid expansion and internal conflict. It examines the westward movement, the Mexican-American War, and the growing tensions over slavery that would eventually lead to the Civil War.

The third part of the book covers the years from 1848 to 1877, a period of reconstruction and reform. It discusses the Civil War, the Reconstruction era, and the rise of the Gilded Age, highlighting the economic growth and social reforms of the time.

The fourth part of the book deals with the period from 1877 to 1918, a time of industrialization and progressivism. It explores the rise of big business, the Progressive Era, and the impact of World War I on American society.

The fifth part of the book covers the years from 1918 to 1945, a period of global conflict and social change. It discusses the Roaring Twenties, the Great Depression, and the United States' role in World War II.

The final part of the book deals with the period from 1945 to the present, a time of post-war reconstruction and the Cold War. It examines the rise of the New Deal, the Korean War, and the Vietnam War, as well as the social movements of the 1960s and 1970s.

THE SILVER METEORS

In 1938, after an exhaustive study of the subject, the management of the Seaboard became convinced that the potential travel volume was sufficient to justify the installation between New York and the east and west coasts of Florida of a fast deluxe all-coach train, featuring speed and comfort at moderate cost.

Accordingly the Seaboard placed an order with the Budd Company for one train of seven cars, with 280 revenue seats, to inaugurate the first eastern seaboard streamline train service.

The train's name—SILVER METEOR—was chosen in a public contest that attracted over 79,000 entries, suggesting 23,000 names. The winning name was proposed by 22 individuals.

Publicity that culminated in a full page advertisement in the metropolitan newspapers on the first day tickets for the train were on sale brought within 48 hours 2,300 applications for seats, which "sold out" the train for a considerable period beyond its maiden trip.

The train's inaugural run was made on February 2, 1939. It was placed in

fast over-night service between New York and Florida, making a round trip every third day, alternating between New York and Miami and between New York and St. Petersburg. In June, 1939, by dividing the southbound and consolidating the northbound, train at Wildwood, Florida, the operation was expanded so as to provide a service to Miami and St. Petersburg every third day instead of every sixth day.

While originally there was uncertainty as to the amount of traffic available during the summer months, the results of operations soon demonstrated that the 7-car train was inadequate to meet the demand for reservations, and the service has since been very greatly extended, as will be shown in detail later.

Through questionnaires distributed on the Silver Meteors, the passenger department of the Seaboard has learned the views of its patrons respecting the service. The following tabulation for the month of March, 1940, gives the responses of 2,759 passengers to the question:

Had the Silver Meteors not been available, what medium of transportation would you have used?	Pullman cars	25.71%	
	Coach on another train	20.67	46.38%
	Private automobile	26.81	
	Airplane	14.64	
	Boat	7.88	
	Bus	3.55	52.88
	Would not have made the trip		.74
	Total		100.00%

The demands for accommodations on the Silver Meteors grew with astonishing rapidity. It shortly became necessary to increase the number of cars in the trains, and to establish a daily service instead of an every-third-day departure from New York.

ADDITIONAL SILVER METEOR TRAINS AND CARS

The experience with the first 7-car train had been so completely satisfactory that, to protect the increasing demand for reservations, the Seaboard management authorized the purchase from the Budd Company of two new trains to increase the service to 7-car daily trains. This purchase was supplemented later by a sufficient number of Budd-built cars to install a daily 14-car train.

The daily 7-car service of the Silver Meteors was instituted on December 1, 1939. Between that date and November

30, 1940, they consisted of three 7-car trains, which were enlarged to 11 cars every third day between December 1, 1939 and May 27, 1940. Between December 1, 1940 and April 27, 1941, the trains were expanded to 14 cars daily.

Silver Meteors of 14 cars were run between New York and Wildwood, Florida, at which junction point the southbound train was divided and the northbound train consolidated, one section of 8 cars making the run between Wildwood and Miami and the other section between Wildwood and St. Petersburg.

TYPICAL CONSIST OF SILVER METEORS

A typical consist of the 14-car all-coach trains which were run from December 1, 1940 to April 27, 1941, with the seating capacity, weight and length of the cars, is given in the following table:

14-Car Train	Revenue Seats	Non-Revenue Seats	Weight (Tons)	Length Over All (Feet)
Diesel-Electric Locomotives (2)			304	140
Baggage-Dormitory-Coach	22		53	85
Baggage-Dormitory-Coach	18		53	85
Coach	60		50	85
Coach	60		50	85
Dining Car		48	57	85
Coach	56		52	85
Coach-Lounge	30	24	53	85
Coach	56		52	85
Coach	60		53	85
Coach-Tavern-Lounge	30	30	54	85
Dining Car		48	58	85
Coach	60		53	85
Coach	60		53	85
Coach-Observation	48	24	51	85
TOTAL	560	174*	1,046	1,330

* Exclusive of non-revenue seats in lounge compartments of coaches.

The cars of the Silver Meteors are of stainless steel, air-conditioned throughout, with comfortable reclining seats, pleasing lighting effects, distinctive decorations, ample lounge accommodations and toilet facilities, and ride smoothly at high speed.

SLEEPING CARS ON SILVER METEORS

In order to meet the growing demand for sleeping car accommodations to Florida and at the same time avoid the operation of additional trains, it was deemed desirable to add sleeping cars to the Silver Meteors. Accordingly, between April 28, 1941 and May 22, 1943, the train carried from 10 to 13 light-weight coach cars and from 3 to 4 standard sleeping cars between New York, Miami and St. Petersburg, with the exception that, beginning December 6, 1942, 13 standard type coaches and sleeping cars of the Advance Silver Meteor between New York and Miami were attached to the regular Silver Meteor between Wildwood and Miami, making between these points a train of 20 cars to December 26, 1942, and 19 cars between December 27, 1942 and May 22, 1943.

EAST AND WEST COAST SILVER METEORS INAUGURATED

The Advance Silver Meteor was withdrawn on May 22, 1943, and on the following day separate sections of the Silver Meteor were installed to run between New York and Miami and be-

tween New York and St. Petersburg. Up to and including March 31, 1945, the concluding date of the earnings statements for the Silver Meteors in this report, the Miami section was composed of 7 light-weight cars, and from 6 to 10 standard type cars, including diners, coaches and sleepers—the St. Petersburg section carrying 7 light-weight cars, 1 standard coach and 4 standard sleeping cars.

EFFECT OF INSTALLATION OF SILVER METEORS ON TRAVEL ON OTHER THROUGH TRAINS

In the period following the installation of the Silver Meteors and before passenger traffic on all lines had registered a substantial increase as a result of the war effort, the earnings of the Seaboard's through passenger trains of standard equipment between New York and Florida were not adversely affected by the popularity of the new streamline trains. On the contrary, the publicity gained through the introduction of the Silver Meteors appears to have increased the prestige of the Seaboard's other passenger trains and the service as a whole. Commencing in 1941, however, the demand for space on all through trains has been so great as to make comparisons of this nature between them of little value.

SEABOARD'S WAR PASSENGER TRAFFIC

The preparation for national defense and later for war, insofar as it appreci-

ably affected railroad traffic, may be said to have begun actively late in 1940. While railroad traffic expanded slightly in the latter part of 1940 incident to the transportation of trainees and of materials for the construction of training camps, the very large increases in war traffic, both freight and passenger, first appeared in 1941 and since then American railroads have shattered all previous transportation records.

In common with that of all other railroads of the country, the traffic of the Seaboard moved upward with the growth of the war effort. Along its lines many training camps and other war establishments of various kinds were built which, since 1940, have been a large source of passenger traffic. Compared with the year ended June 30, 1939, the Seaboard's revenue passenger miles increased 82 per cent and 636 per cent in the years ended June 30, 1941 and 1944, respectively. This greatly enlarged passenger traffic was handled with an increase in the passenger-train miles of only 6 per cent and 32 per cent, respectively.

The prewar action of the management in purchasing new passenger cars and motive power was largely instrumental in making possible this remarkable achievement.

ORDERS FOR ADDITIONAL EQUIPMENT

In anticipation of future passenger-train car requirements, the Seaboard and associated railways recently have placed

orders with the Budd Company for 48 streamline, light-weight cars, to be built as soon as labor and materials are available.

MOTIVE POWER OF SILVER METEORS

Between New York and Washington the Silver Meteors are hauled by electric locomotives of the Pennsylvania Railroad.

Between Washington and Richmond, 116 miles, Diesel-electric locomotives of the Seaboard were used until September 30, 1942, when steam locomotives of the Richmond, Fredericksburg and Potomac Railroad were substituted.

Between Richmond and Wildwood the number of 2,000 HP Diesel-electric locomotive units per train has varied from one unit for the early 7-car trains to three units for the 17-car trains composed of light-weight equipment and standard type sleeping cars.

When the southbound Silver Meteors were divided at Wildwood, one section going to Miami and the other to St. Petersburg, and multiple Diesel-electric units were employed, one of the units not required south of Wildwood was cut out of the train at that junction point and turned back on the same day on the northbound Silver Meteor.

Between Wildwood and Miami the number of power units per train has varied from one to three Diesel-electric locomotives, except that four units were employed for a short period when the

Advance Silver Meteor was consolidated with the Silver Meteor making a train of 19 to 20 light-weight and standard type cars.

From June 5, 1939 to May 27, 1940, a Diesel-electric locomotive provided the motive power for the trains between Wildwood and St. Petersburg. Other

than this they have been hauled by a steam locomotive.

Upon the installation in 1943 of a West Coast Silver Meteor, two 2,000 HP Diesel-electric locomotives were used between Richmond and Jacksonville and one steam locomotive between Jacksonville and St. Petersburg.

PHYSICAL CHARACTERISTICS OF SEABOARD TRACK

The Seaboard is a single-track line throughout, except for the section between Baldwin and Starke, 26 miles, and between certain other strategic points of lesser distance.

The route of the Silver Meteors between Richmond and Miami-St. Petersburg traverses the Appalachian foothills in Virginia and the Carolinas, and the lower semi-flat regions of southern Georgia and Florida. The ruling grades and maximum curves vary accordingly, ranging up to 1.25 per cent grades and 6° curves.

RULING GRADES are as follows:

Section	Distance (Miles)	Ruling Grades in both Directions
Richmond-Hamlet	253	1.1%
Hamlet-Columbia	106	1.2
Columbia-Savannah	142	1.0
Savannah-Jacksonville	138	0.4
Jacksonville-Wildwood	127	0.8
Wildwood-Miami	278	0.8
Total	1,044	

Between Wildwood and St. Petersburg, 137 miles, the ruling grades in both directions are the same as between Wildwood and Miami, 0.8 per cent.

MAXIMUM CURVES. Except in cities and terminals, the maximum curves between Richmond and Savannah are 6°; between Savannah and Miami-St. Petersburg 5°. The predominating curves on the two districts are 3° and 2° respectively. About 87 per cent of the line is straight track.

WEIGHT OF RAIL—100 pound.

TIES. About 75 per cent of the ties are treated; the remainder are cypress ties used in the section south of Columbia. The entire line is tie-plated.

BALLAST. Eighty per cent of the line is ballasted with crushed stone and gravel, principally the former.

REVENUES AND EXPENSES OF SILVER METEORS

In the preparation of our first report covering the operations of the streamline trains of a group of railways we set up a form for displaying revenues and expenses to which all of the lines could adapt their statistics. As subsequent reports were made the same form was used for the sake of uniformity in making comparisons from year to year. For various reasons the expenses did not include many items that properly attach to the service. Depreciation, for example, is a definite expense, but the views of railroad officers have differed widely as to the proper rate chargeable against the new type trains. Interest on cost is an even more definite expense, but, as in the case of depreciation, no uniform rate could be applied because the interest rates on equipment trusts of the purchasing lines differed depending upon their credit position and the time of issue. Again both depreciation and interest are related to cost and in many instances cost figures were not available to us, and neither item is affected by the volume of traffic or the direct expenses of operation. These items were therefore omitted with the knowledge that each line would apply its own

depreciation and interest rates in any comparisons it desired to make.

In the early days of streamline train operations the traffic they carried was a small proportion of the total of the line and the added cost for track maintenance, general expense, taxes, etc. was of such relative inconsequence as not to justify the attempt to measure it. Now, however, streamline train operations are much more extensive, and constitute a much larger proportion of the total passenger train-mileage than in the earlier period, especially on the Seaboard, and these omitted expense items, therefore, more particularly federal and other taxes, are important in any determination of final net profits and should properly be included. But to undertake to make a separation of system items of this nature between passenger and freight traffic on the basis of some formula, such as that of the Interstate Commerce Commission, and further to divide the passenger traffic expenses between those assessable against streamline train operations and those of standard equipment, in this time of manpower shortage, would place an unwar-

ranted burden on the accounting department of the railroad.

We do not in the least doubt the reality of these expenses, but we do doubt if their ascertainment would add greatly to the value of the information contained in this report. For these reasons and for the sake of uniformity in enabling the reader to make yearly comparisons of the different items, we have adhered to the form used in our previous reports in the preparation of the earnings statements which follow.

In comparing the NET REVENUE of the Silver Meteors, as shown in the following statements, with the standard accounting figure of GROSS INCOME (in this case the net income of the Seaboard system available for interest and other corporate purposes), it should be emphasized, therefore, that the former is calculated on a basis which includes the out-of-pocket costs and those directly allocable to the operation of these trains and does not account for such items as taxes, depreciation, track maintenance, general expense, etc., as does the system GROSS INCOME. On the other hand, neither the NET REVENUE of the Silver Meteors nor the system GROSS INCOME takes into account the item of interest. In other words, the figures of NET REVENUE in our statements and of GROSS INCOME in the Receivers' accounts are not comparable.

REVENUES OF SILVER METEORS
BY SIX-MONTHS' PERIODS

The brief statement below, of the revenues of the Silver Meteors (excluding dining-buffet car revenues) by six-months' periods, is given by way of introduction to the more detailed statements which follow:

Period	6 Months	Year
July 1 to Dec. 31, 1939	\$ 460,300	
Jan. 1 to June 30, 1940	1,154,942	\$ 1,615,242
July 1 to Dec. 31, 1940	977,626	
Jan. 1 to June 30, 1941	1,839,374	2,817,000
July 1 to Dec. 31, 1941	1,682,989	
Jan. 1 to June 30, 1942	2,695,937	4,378,926
July 1 to Dec. 31, 1942	2,969,964	
Jan. 1 to June 30, 1943	3,801,252	6,771,216
July 1 to Dec. 31, 1943	4,863,126	
Jan. 1 to June 30, 1944	5,928,185	10,791,311
July 1 to Dec. 31, 1944	5,370,141	
Jan. 1 to March 31, 1945	3,098,951*	8,469,092†

* Three Months

† Nine Months

REVENUES AND EXPENSES
OF SILVER METEORS
FEB. 2, 1939 TO MARCH 31, 1945

We now present the statements of revenues and expenses of the Silver Meteors from the beginning of operation to March 31, 1945.

For reasons explained in the foregoing the figures of NET REVENUE in the statements do not account for a proportion of federal and other taxes, interest, depreciation, track maintenance, general expense, etc., properly assessable against the operation of the streamline trains.

Note: While the Silver Meteors are through New York-Florida trains, the figures shown in the statements pertain only to Seaboard Air Line Operations.

20 STREAMLINE, LIGHT-WEIGHT, HIGH-SPEED PASSENGER TRAINS

SEABOARD AIR LINE RAILWAY
REVENUES AND EXPENSES OF SILVER METEORS
BETWEEN
RICHMOND—MIAMI AND ST. PETERSBURG (1)

Item	Operation Begun February 2, 1939									
	1 Train 7 Passenger-Train Cars. One round trip every three days.		3 Trains (4) 7 Passenger-Train Cars each. (5) Each one way daily. (6)		3 Trains 14 Passenger-Train Cars each. (7) Each one way daily.		3 Trains 16 Passenger-Train Cars each. (8) Each one way daily.		3 Trains (9) 16 Passenger-Train Cars each. (10) Each one way daily.	
	4 mos. 27 days ended June 30, 1939		Year ended June 30, 1940		Year ended June 30, 1941		Year ended June 30, 1942		Year ended June 30, 1943	
	Amount	Per Train-Mile	Amount	Per Train-Mile	Amount	Per Train-Mile	Amount	Per Train-Mile	Amount	Per Train-Mile
REVENUES										
Passenger revenue—in coaches	\$280,799	\$2.785	\$1,615,242	\$2.725	\$2,687,418		\$3,446,462		\$5,024,981	
Passenger revenue—in Pullman cars					129,582		932,464		1,746,235	
Total Passenger Revenue					2,817,000	\$3.241	4,378,926	\$5.040	6,771,216	\$7.304
Pullman contract revenue					14,915		89,083		261,317	
TOTAL REVENUES	280,799	2.785	1,615,242	2.725	2,831,915	3.258	4,468,009	5.143	7,032,533	7.586
TRAIN EXPENSES										
Wages of crews	36,238	.359	204,538	.345	304,148	.350	366,017	.421	437,851	.472
Fuel	5,922	.059	49,598	.084	86,993	.100	166,440	.192	245,991	.265
Lubricants	1,427	.014	7,789	.013	15,090	.017	29,726	.034	38,892	.042
Train supplies and expenses	10,047	.100	31,772	.054	62,038	.071	97,370	.112	124,016	.134
Power plant maintenance (2)	4,903	.049	73,264	.123	165,778	.191	249,857	.288	319,756	.345
Train maintenance (2)	9,955	.099	39,513	.067	110,695	.127	228,199	.263	241,493	.261
Other expenses (3)	11,420	.113	113,288	.191	208,835	.241	329,654	.379	367,262	.396
TOTAL TRAIN EXPENSES	79,912	.793	519,762	.877	953,577	1.097	1,467,263	1.689	1,775,261	1.915
Dining-Buffer, net gain or loss	-758	-.007	2,223	.004	-10,130	-.012	-34,861	-.040	-39,526	-.043
TOTAL, Including Dining-Buffer gain or loss	80,670	.800	517,539	.873	963,707	1.109	1,502,124	1.729	1,814,787	1.958
NET REVENUE	200,129	1.985	1,097,703	1.852	1,868,208	2.149	2,965,885	3.414	5,217,746	5.628
Per cent of revenues	71.3		67.9		66.0		66.4		74.2	
Route-miles between—										
Richmond and Miami	1,051		1,051		1,051		1,051		1,051	
Richmond and St. Petersburg	911		911		911		911		911	
Train-miles	100,811		592,852		869,262		868,700		926,992	
Passenger-miles (estimated)	20,126,000		113,749,437		194,033,285		272,892,201		380,780,931	

Notes:

- (1) Operates through between New York and Florida via the Pennsylvania Railroad, Richmond, Fredericksburg & Potomac, and Seaboard Air Line February 2, 1939, to June 5, 1939, one round trip every third day, alternating between New York and Miami and between New York and St. Petersburg. From June 6, 1939, to November 30, 1939, by dividing and reuniting the train at Wildwood, Florida, service to and from Miami and St. Petersburg was made available every third day instead of every sixth day. From December 1, 1939, a daily service was inaugurated. Commencing May 23, 1943, the Silver Meteors were operated in two sections between New York and Florida, the East Coast section between New York and Miami and the West Coast section between New York and St. Petersburg.
- (2) Does not include estimated amounts accumulated, in excess of actual expenditures, for general overhaul of power plant and passenger-train cars.
- (3) Advertising expenses not included.
- (4) One train, July 1, 1939, to November 30, 1939.
- (5) December 1, 1939, to May 27, 1940, 7 cars two days out of three, with a third-day 11-car train. May 28 to June 30, 1940, 7 cars daily.
- (6) July 1, 1939, to November 30, 1939, one round trip every three days. December 1, 1939, to June 30, 1940, daily.
- (7) July 1, 1940, to November 30, 1940, 7 cars.
December 1, 1940, to April 27, 1941, 14 cars.
April 28, 1941, to June 30, 1941, 13 cars, including 3 Standard Pullman sleeping cars.
- (8) July 1, 1941, to October 31, 1941, 13 cars, including 3 Standard Pullman sleeping cars.
November 1, 1941, to December 11, 1941, increased to 16 cars by the addition of 2 light-weight cars and 1 Standard Pullman sleeping car.
December 12, 1941, to April 23, 1942, 1 light-weight car added making a total consist of 17 cars.
Three of the 4 Pullman sleeping cars originated at Boston and were attached to the Silver Meteor at Washington. On the northbound trip all of the sleeping cars were handled through to New York.

SEABOARD AIR LINE RAILWAY

REVENUES AND EXPENSES OF SILVER METEORS

BETWEEN

RICHMOND—MIAMI AND ST. PETERSBURG (1)

Operation Begun February 2, 1939

MIAMI SECTION		ST. PETERSBURG SECTION		TOTAL MIAMI AND ST. PETERSBURG SECTIONS		MIAMI SECTION		ST. PETERSBURG SECTION		TOTAL MIAMI AND ST. PETERSBURG SECTIONS	
3 Trains 17 Passenger-Train Cars each. (11) Each one way daily.		3 Trains 12 Passenger-Train Cars each. (12) Each one way daily.		6 Trains 29 Passenger-Train Cars. (13) Each one way daily.		3 Trains 17 Passenger-Train Cars each. (14) Each one way daily.		3 Trains 12 Passenger-Train Cars each. (15) Each one way daily.		6 Trains 29 Passenger-Train Cars. (16) Each one way daily.	
Year ended June 30, 1944		Year ended June 30, 1944		Year ended June 30, 1944		9 months ended March 31, 1945		9 months ended March 31, 1945		9 months ended March 31, 1945	
Amount	Per Train-Mile	Amount	Per Train-Mile	Amount	Per Train-Mile	Amount	Per Train-Mile	Amount	Per Train-Mile	Amount	Per Train-Mile
\$4,132,767		\$3,189,451		\$7,322,218		\$3,237,183		\$2,395,266		\$5,632,449	
2,240,557		1,228,536		3,469,093		1,917,353		919,290		2,836,643	
6,373,324	\$8.284	4,417,987	\$6.662	10,791,311	\$7.533	5,154,536	\$8.991	3,314,556	\$6.640	8,469,092	\$7.897
250,984		107,036		358,020		208,031		89,452		297,483	
6,624,308	8.610	4,525,023	6.823	11,149,331	7.783	5,362,567	9.354	3,404,008	6.819	8,766,575	8.174
336,215	.437	297,302	.448	633,517	.442	266,097	.464	228,634	.458	494,731	.461
212,918	.277	157,794	.238	370,712	.259	197,643	.345	124,459	.249	322,102	.300
32,032	.042	19,978	.030	52,010	.037	29,906	.052	15,727	.032	45,633	.043
170,388	.221	119,375	.180	289,763	.202	146,188	.255	89,847	.180	236,035	.220
381,158	.495	239,781	.362	620,939	.433	454,560	.793	229,658	.460	684,218	.638
225,521	.293	153,728	.232	379,249	.265	222,665	.388	146,450	.293	369,115	.344
350,009	.455	258,478	.390	608,487	.425	265,998	.464	219,498	.440	485,496	.453
1,708,241	2.220	1,246,436	1.880	2,954,677	2.063	1,583,057	2.761	1,054,273	2.112	2,637,330	2.459
-75,516	-.098	-30,835	-.046	-106,351	-.074	-21,301	-.037	-13,150	-.026	-34,451	-.032
1,783,757	2.318	1,277,271	1.926	3,061,028	2.137	1,604,358	2.798	1,067,423	2.138	2,671,781	2.491
4,840,551	6.292	3,247,752	4.897	8,088,303	5.646	3,758,209	6.556	2,336,585	4.681	6,094,794	5.683
73.1		71.8		72.5		70.1		68.6		69.5	
1,051		906		1,051		1,046		911		1,046	
769,332		663,192		1,432,524		573,288		499,148		1,072,436	
337,002,278		242,807,199		579,809,477		272,728,979		184,185,773		456,914,752	

April 24, 1942, to May 29, 1942, all of the 17 cars were handled from and to New York.
May 30, 1942, to June 30, 1942, 16 cars by the elimination of 1 light-weight car.

- (9) Six trains commencing May 23, 1943, because of inauguration of two through daily sections, one to Miami and one to St. Petersburg. Revenues and expenses of both sections from May 23, 1943, included.
- (10) July 1, 1942, to May 22, 1943, 16 cars composed of 12 light-weight cars and 4 Standard Pullman sleeping cars.
December 6, 1942, to May 22, 1943, 13 cars of the "Advance Silver Meteor" (composed of standard type coaches and Pullman sleeping cars) were attached to the regular Silver Meteor between Wijdwood and Miami, making between these points a train of 20 cars from December 6, 1942, to December 26, 1942, and 19 cars from December 27, 1942 to May 22, 1943.
May 23, 1943, to June 30, 1943, the New York-Miami section had 13 cars, composed of 7 light-weight cars and 6 standard type cars including 4 Pullman sleeping cars. The New York-St. Petersburg section had 12 cars, composed of 7 light-weight cars and 5 standard type cars, including 4 Pullman sleeping cars.
- (11) July 1, 1943, to December 17, 1943, 13 cars consisting of 7 light-weight cars and 6 standard type cars, including 4 Pullman sleeping cars.
December 18, 1943, to March 3, 1944, 16 cars consisting of 7 light-weight cars and 9 standard type cars including 7 Pullman sleeping cars.
March 4, 1944, to June 30, 1944, 17 cars consisting of 7 light-weight cars and 10 standard type cars, including 7 Pullman sleeping cars.
- (12) Seven light-weight cars and 5 standard type cars, including 4 Pullman sleeping cars.
- (13) See notes 11 and 12.
- (14) Seven light-weight cars and 10 standard type cars, including 7 Pullman sleeping cars.
- (15) Seven light-weight cars and 5 standard type cars, including 4 Pullman sleeping cars.
- (16) See notes 14 and 15.

IN CONCLUSION

This report should not be concluded without a word of tribute to the Seaboard management. When the question of installing streamline trains on the Seaboard was first broached there was no precedent in the Southeast from which to assess the value to the line of the new type of service. The road had been in receivership for a number of years with no prospect of an early reorganization, and the country was just emerging from the severest depression in its history in the course of which railroad traffic on all lines suffered a decline such as had never before occurred. Large sums of money were required to be spent on the line for improvements and betterments to roadway and equipment in the interest of improved transportation service to the public and to enable it to sustain itself in a highly competitive area.

The bondholders' committees, having had to forego interest on the securities they represent since the beginning of the receivership and being fully cognizant of the large financial obligations the receivers must assume for other purposes,

were at first quite naturally disinclined to authorize the much greater expenditures for streamline trains than for trains of standard equipment to provide a service the value of which had not been demonstrated in Seaboard territory.

Following a comprehensive survey of existing streamline train operations in the West, including a study of our published reports on the subject, the Seaboard management became convinced that the expenditure incident to the installation of a trial train of this type was fully justified. The train was therefore purchased and placed in service.

The wisdom of this action became apparent immediately, as the astonishing growth record in the foregoing statements discloses.

To our minds, the action of the Seaboard management in recommending the purchase of the initial Silver Meteor in the face of its difficult financial and competitive situation is an outstanding example of calculated business courage and foresight.

