

INTERIM TECHNICAL REPORT

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TOWARDS AN "AMERICAN NATIONAL RAILROAD"



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TRI-STATE REGIONAL PLANNING COMMISSION
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A PROPOSAL FOR DISCUSSION

TOWARDS AN "AMERICAN NATIONAL RAILROAD"

Nearly 20% of the nation's railroads are bankrupt, awaiting government aid or dismemberment. The other 80%, operated pretty much the same way as the losers, are fortunate enough to be located in areas of rapid industrial and population growth. Overall, the rail industry in 1970 produced its least profitable year since 1939. The industry's collective hopes rest in a massive program of federal subsidy and investment, aimed at renewing in kind a basically obsolete rail technology of the 1890's. Perhaps symptomatic of the industry's preoccupation with obsolescence and its well-earned reputation of "robber-baron" insensitivity to the public is its choice of name for the subsidy program - "ASTRO" - and its overt and near-criminal mistreatment, in the recent past, of 90% of its customers (and voters) those riding passenger trains.

The Proposed Solution - ANR

It is proposed that appropriate legislation be adopted requiring all of the nation's Class I railroads (and the recently created National Rail Passenger Corporation) to merge into a single, privately-owned American National Railroad Corporation. The carriers would be given a brief period of time, perhaps six months, to develop a voluntary financial basis for merger. Should, say, 90% of the carriers fail to come to terms, then the ICC or some other appropriate agency would be empowered to arrange a fair and equitable exchange of securities and obligations in forming the new corporation. The merger would become effective one year after the adoption of the legislation, and litigation could and probably would continue for the next fifty years.

The new corporation would absorb the rail plant and operations of all existing railroads. Freight rates would be mandated to provide a long-term return of 10% on investment (realistically appraised), provided that evidence is submitted that operations are conducted as efficiently as possible. The corporation would be placed in a glass house with all management decisions subject to scrutiny of college professors, law students, and housewives. An independent regulatory agency would be established to process rate and service charges. A separate consumer agency financed by a tax on rail shipments would assemble information on the industry's performance and conscience, and a Federal Railroad Administration would promote and plan the rail role in the nation's overall transportation strategy. At least 5% of the industry's gross would be required to be devoted to research and technological development.

Some consideration might be given to selling the corporation to its constituent labor force. While it is doubtful if railway labor leaders would be anxious to manage such an awesome enterprise, such a scheme would provide the ideal (on paper) incentive for enlightened work rules and increased productivity. In any event, railway labor would participate in the formation of the new corporation. A set of general fair employment principles would be in-

cluded in the legislation regarding job security, early retirement, relocation compensation, work assignments of reasonable duration, compensation for work away from home, and careful analysis of each job to assess its contribution to total industry product. Detailed conditions would be negotiated or arbitrated.

- H.S.G.T. Network

One of the principal benefits of a unified ANR would be the ability to rapidly introduce industry-wide technological and operating innovations. One such innovation would be to designate a network of 45,000 miles of rail route as a High Speed Ground Transportation Network. An example of such a network, shown in Figure 1, connects all U.S. counties or SMSA's exceeding 65,000 persons in 1970, some 75% of the continental U.S. population. The HSGT net would be comparable in extent to the Interstate Highway System. Because of the great redundancy and fine mesh of the existing railway net, removal of the HSGT system still leaves a very complete conventional rail system, Figure 2. Several sectors of the nation, though, would require joint use of HSGT network segments to maintain connectivity, most notably the Los Angeles area. Industries located on the HSGT network would continue to receive conventional rail delivery, but most conventional freight would be concentrated on the remaining lines.

Perhaps as much as 90% of the designated HSGT net is already capable of sustaining light-weight, tilting body passenger-and-"air freight" trains at 120 mph top speeds. Experience on the New York-Washington Metroliner route indicates that 120 mph operation through adequately protected grade crossings is feasible and practical. An investment of \$500,000,000 would suffice to put the national HSGT system into practical operating condition. Another \$500,000,000 could purchase enough rolling stock to provide a bi-hourly headway over the entire network. Revenue potential for such a freight and passenger system could approach \$2 billion annually. Much of the system could be in operation within a year.

- Conventional Freight Network

Much of the remaining 175,000 miles of railroad is branch line trackage serving little traffic. Many proposals have been raised for vastly trimming secondary trackage, most recently by the Penn Central trustees. Other, more radical, proposals suggest that a wholesale revision of conventional train operating technology be undertaken - that the present concept of individual carloads, assembled, sorted into trains, disassembled, and distributed be replaced with a unit train concept where rail shipments would be accommodated only in train-load quantities available only to the largest shippers. Individual truck load size shipments would be consolidated into container trains at metropolitan centers.

While the particular approach to conventional freight train rationalization is not altogether clear, a unified ANR could move rapidly to analyze and effectuate such a scheme. At the very least, car utilization in the existing individual carload scheme could be vastly improved if all cars were owned and operated by a single carrier. Obtuse car routings and other inefficient practices, caused by the balkanization of the industry, would be immediately avoided.

Almost certainly rationalization and concentration of rail carload traffic would most affect the remotest and smallest population centers, and the smallest and weakest industries. It might well serve broader national objectives if conventional rail freight rationalization schemes provided some means of gradual adjustment and compensation for the communities and industries affected. Otherwise these local interests may generate enough legitimate public sympathy and concern to freeze the status quo indefinitely at the price of massive federal subsidies, i.e. "ASTRO".

- Rail Commuter Services

Though a miniscule part of rail operations, commuter services affect large segments of the public, in particular the most influential business and community leaders of some of the largest metropolitan areas. Where such services are operated by financially stable carriers, satisfactory operations are achieved at a limited loss. Where carriers are weak or bankrupt, excessive losses are reported and made up by public subsidies. An ANR could be expected to operate all existing commuter services on an avoidable cost basis at a near break even point. In addition nearly two dozen more cities could have commuter service on one or more radial routes. This would be possible because unified operation under ANR would allow rationalization of urban rail routes and services releasing redundant trackage, and would provide the basis for negotiating more enlightened work rules. Three middle-sized cities - Seattle, Atlanta and St. Louis have rail tunnels or cuts passing through the very centers of their CBD's. These same cities are considering rapid transit schemes that would cost in total over \$4 billion, 2/3 of which is expected to come from federal grants. In most medium sized cities, introduction of rail commuter service would head-off foolish and extravagant rapid transit schemes that are dictated more by civic pride than cost-effectiveness analysis. Rail commuter services would promote more rapid outward development of these cities, reducing population density and pressure in the centers.

- International Services

Compatibility with the adjacent Canadian and Mexican railroads must be maintained as ANR evolves more advanced rail technology. Extension of the U.S. HSGT network to connect with nearby Canadian cities, such as Montreal and Vancouver would be highly desirable. Should a comparable Canadian HSGT evolve, it would logically be extended to nearby U.S. cities like Detroit and Buffalo. Canadian owned U.S. railroads and Canadian subsidiaries of U.S. railroads might best be exchanged and merged into their respective consolidated national systems. Two notable exceptions might be the Canadian Pacific short-cut across upper Maine, and the Penn Central's Detroit-Buffalo line via southern Ontario. Mexican HSGT routes would also be expected to evolve, connecting with the U.S. system at one or more border cities.

Drastic changes in conventional rail freight operations and technology would surely require careful consideration of border effects. Hopefully these changes would be equally beneficial to the adjacent nations and a collective course of action followed.

International ocean shipping and ANR operations should also be closely coordinated. Though ANR could be permitted to operate its own container ships to foreign ports, such a move would be too startling to worldwide maritime interests. The Canadian Pacific precedent is of a much smaller scale. ANR should participate in U.S. port planning and international shipping regulation as these activities begin to occur more comprehensively.

Making ANR Work

ANR legislation would set the stage for the rapid integration and modernization of the nation's railroads. The boldness of the move and massive public attention focused on the industry hopefully would attract highly qualified management personnel. Only with a drastic change in management capability and morale can the benefits inherent in the institutional adjustments really be achieved.

ANR would become the nation's fifth largest private corporation, in terms of revenue, and the third largest private employer. Table 1 shows how ANR would rank among the nation's top ten corporate giants. Five of its colleagues are primarily concerned with highway transportation. Two others are near monopolies in their particular product lines - telephone service and computers. None of the top ten would be as subject to the degree of public surveillance and concern as would ANR.

ANR would not constitute the world's largest rail operation under a single management. The Soviet Railway system produces twice the ton miles and ten times the passenger miles as ANR, with four times the manpower. Little evidence is available as to the management efficiency of this state enterprise, but the operation seems to be a smooth working component of Soviet industry.

The ANR enabling legislation must include provision for a smooth and rapid merger with an efficient and imaginative management. Without such leadership, the enterprise would not succeed for long.

The Longer Term

The nation's railroads collectively in ANR could grow old more gracefully, than as individual enterprises. As the railroads continue to shrink in their share of the nation's transportation business, the necessary contractions and deletions will be less painful if borne nationally. Branch line and service adjustments can be judged on an incremental basis, relative to a strong national system, rather than piecemeal. The possibilities for increased efficiency and unified action hold promise of slowing the relative decline of rail use.

Little likelihood exists for railroads to return to their turn-of-the-century status as a "growth industry", unless some radical changes in operations or technology take place. Unit trains and efficient operating techniques might greatly reduce the cost of long distance high volume movements expanding rail ton miles. Higher quality transportation will be required, however, if ANR is to grow substantially in dollar volume. The individual carload system, currently the industry standard, might be raised in quality by more imaginative service, tighter control, and frequent, short train operation. Direct delivery to individual on-line plants provides the maximum "rail" revenue. Substitution of truck delivery of containers from consolidated rail terminals represents a further shrinkage of "rail" participation in the transportation process.

This substitution seems inevitable unless some drastic service and cost improvements in the individual carload system can be devised by ANR. The bulk of current non-rail dollar expenditures are for short distance freight movement in metropolitan areas. Rails are inherently unsuited for this operation.

The labor-intensive local truck freight delivery systems in metropolitan areas do represent a potential long-term market for ANR. Current interest and experimentation in individualized automated "personal rapid transit" systems for people movement might be elaborated for goods movement use as well. ANR would be in a prime position to enter this field with its national rail coverage. These PRT systems are thought to be basically miniature intra-metropolitan area railways operating on fixed guideways (mostly elevated). ANR could provide the long-haul transfer between metropolitan areas for these low speed systems. ANR could adopt the most promising design as "standard" and move quickly to establish a national connecting network. Revenue potential for such a system would be enormous. Eventually, however, higher speed versions of PRT would be developed eliminating the need for rail "piggy-back", except for longer haul HSGT runs. Demand for conventional rail transportation would then be much further lessened.

Another potential area for long term revenue growth for ANR would be in its HSGT network. The service quality initially would be somewhere between truck and air freight. If volume occurs and grows sufficiently, the HSGT could enjoy stable and declining unit costs providing a lower cost alternative to air freight. Since air costs seem less likely to decline - due to environmental difficulties - the rail system could find its share of this market growing.

The growth in the quality of the HSGT system can be expected to maintain or increase its competitive advantage in the longer term. This growth is inherent in the conventional rail track system. Tractive effort through steel wheels to steel rail seems to diminish as speeds approach 200 mph (still providing considerable growth capability from the initial 120 mph maximum contemplated). However, conventional aircraft turbo-jet engines have been fitted to wheeled land vehicles and speeds in excess of 600 mph have been achieved on the Bonneville Salt Flats. The world's record land speed is regularly achieved on "conventional" steel rail track at Alamogordo, New Mexico with rocket propelled sleds traveling at 5,300 miles per hour. Magnetic levitation, possible with supercooled electro magnetic technology might offer some riding quality advantages over steel wheels at high speeds. Magnetic flux braking offers potential control advantages. Use of the steel rails as reaction rails for propulsion would offer tremendous line cost advantages over the installation of separate aluminum reaction fins mounted between the rails, as at the Pueblo, Colorado linear induction motor test track. At very high speeds (over 200 mph) jet or LIM propelled trains could be designed to fly over the rails by channeling air flow between the wheels and the rails, or by use of air foils elsewhere on the vehicles. ANR's HSGT net would be able to capture research dollars that might otherwise be directed toward low pressure tracked air cushion development.

The HSGT net penetrates the core of every major metropolitan area mostly on grade separated rights of way. Obviously very high speed rail operation requires complete grade separation and protection. The HSGT net offers the possibility of gradual upgrading of segments of route to this capability while maintaining compatibility with all other segments. Alternatively, the start-up costs of a brand new system would be astronomical.

APPENDIX I

ANR AND THE TRI-STATE REGION

The merger and unification of the nation's railroads into a single, well managed, and sensibly operated system would be a tremendous boon to the Tri-State Region. New York suffers particularly from the present balkanization of railroads because as a receiver of goods, predominately, it provides little return use for the thousands of freight cars delivered daily. Thus the rails feeding New York serve more of a terminal function and encounter considerable backhauling of empty cars. Rail freight rate divisions and freight car per-diem rates reflect an earlier era. Adjustments are painfully slow, with rail bankruptcy and crises the result.

A strong ANR, operating commuter services in cities around the nation, could maintain services in the New York area at substantially reduced levels of avoidable cost. National policy might require ANR to absorb these minor operating losses. A positive approach to labor utilization negotiated on a national basis could lead to vastly increased service levels without increases in operating personnel. A particular benefit to the region of ANRization would be the ability to coordinate trans-Hudson rail services, now maintained by three separate companies.

The Tri-State Region would be the greatest source of revenue and traffic for the HSGT net. The net would in turn be of special benefit to the region, reducing or slowing the need for airport expansion.

Perhaps the greatest benefit to the region from ANR and also of great benefit to all metropolitan areas in the nation, would be the rapid release of vast tracts of urban land now used for rail purposes. While coordination and consolidation might be achieved without ANR, efforts in the past have been slow, and success difficult. It is impossible for any metropolitan region, even Tri-State, to "out-railroad" the present fractured and immobile rail management. An aggressive and enlightened ANR management required by law to participate in the regional planning process would greatly speed this effort, while preserving essential facilities.

TABLE I

TEN LARGEST PRIVATE CORPORATIONS - U.S. - 1970

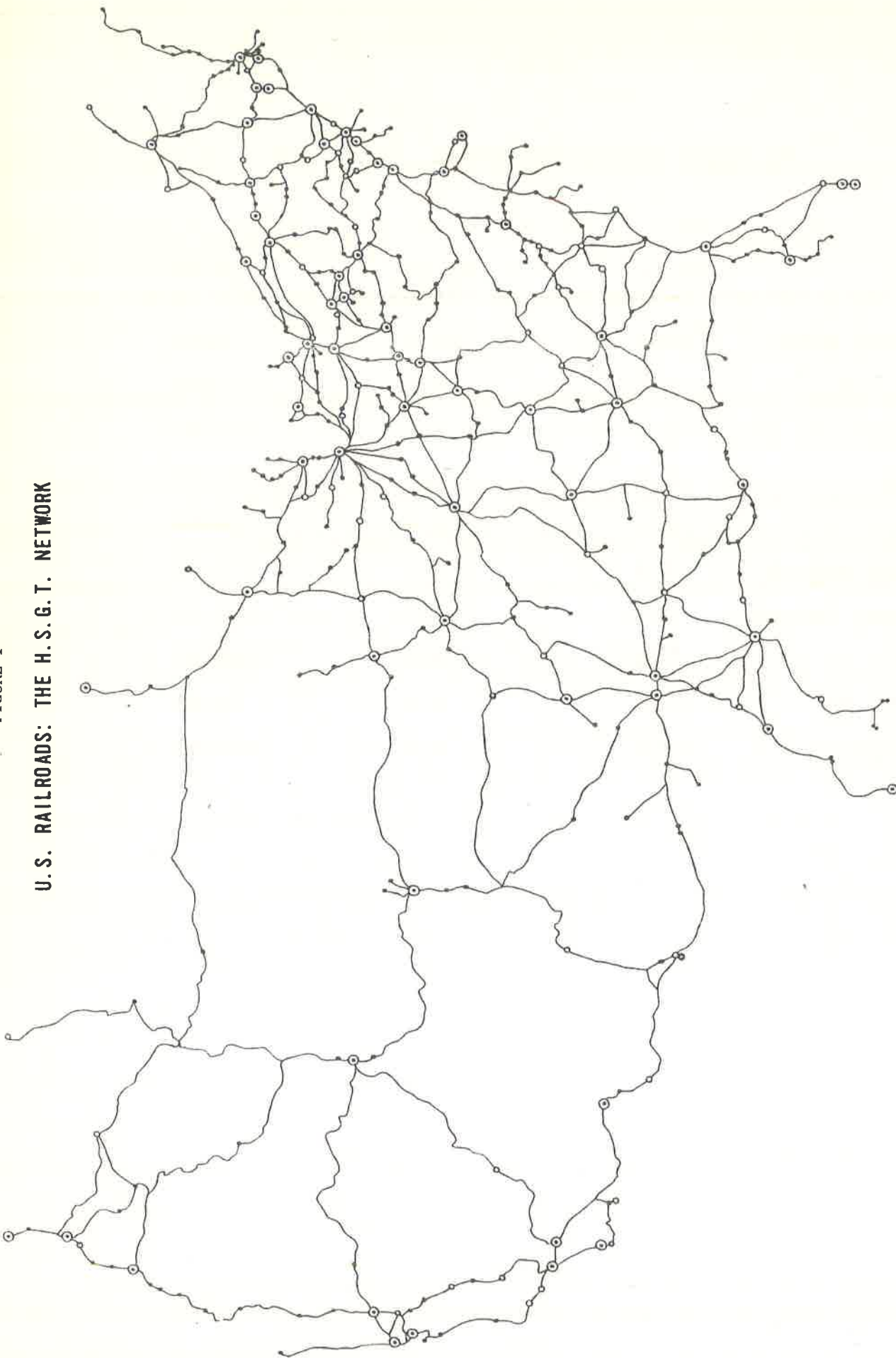
	<u>Name</u>	<u>Revenue</u> (bil.)	<u>Earnings</u> (bil.)	<u>Employees</u>
1.	General Motors	\$18.8	\$ 0.6	696,000
2.	A.T. & T	17.0	2.2	773,000
3.	Standard Oil (N.J.)	16.6	1.3	143,000
4.	Ford	15.0	0.5	432,000

5.	ANR	12.0	0.1	568,000

6.	Sears, Roebuck	9.3	0.5	359,000
7.	General Electric	8.7	0.3	397,000
8.	IBM	7.5	1.0	269,000
9.	Mobil Oil	7.3	0.5	76,000
10.	Chrysler	7.0	0.0	228,000

FIGURE 1

U. S. RAILROADS: THE H. S. G. T. NETWORK

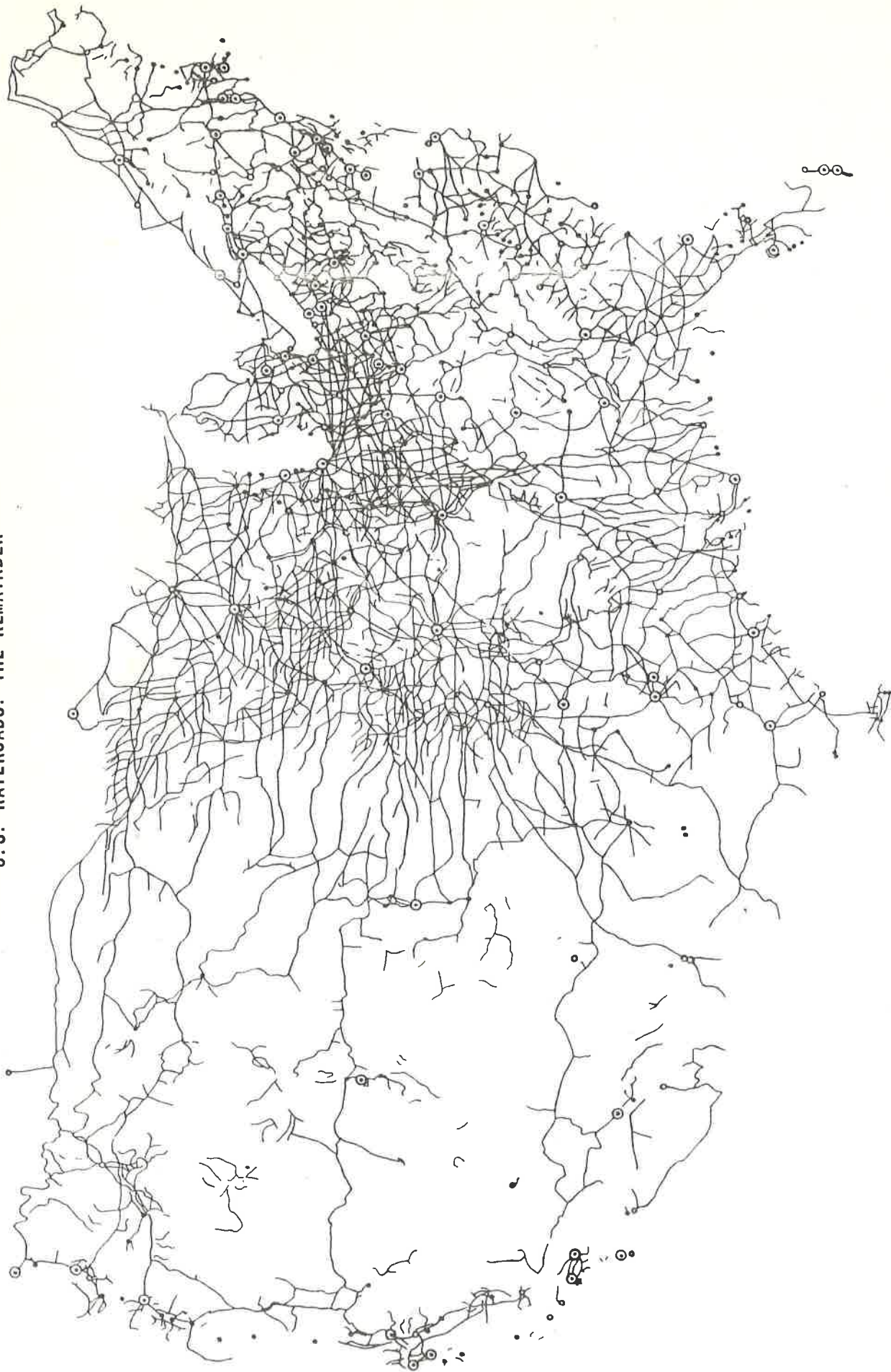


POP. KEY-(SMSA'S OR COUNTIES)-

- 500,000 -
 - 250,000 - 500,000
 - 65,000 - 250,000
- 1970 CENSUS

FIGURE 2

U.S. RAILROADS: THE REMAINDER



POP. KEY-(SMSA'S OR COUNTIES)-

- ⊙ 500,000 -
- 250,000 - 500,000
- 65,000 - 250,000

-1970 CENSUS

