ANALYSIS OF SHORT LINE RAILROAD DEVELOPMENT AND A CASE STUDY OF THE CASSELTON-MARION BRANCH LINE IN NORTH DAKOTA

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Introduction

Agriculture and the railroad network evolved simultaneously in North Dakota. With the development of railroads, farmers had a way to market their grains, and the railroads had an attractive revenue source. Country elevators and small towns sprang up along the railroads as retail centers for rural areas. Technology levels at that time necessitated construction of many branch or "feeder" lines to service all producers. Also, fierce competition among developing railroads, as well as lack of producer mobility, caused duplication of service in some areas. The result was a maze of branch lines in grain producing areas.

Advancements in production agriculture, improved grain handling techniques and technological breakthroughs in truck transportation have changed the picture considerable. Efficient, high capacity trucks allow farmers the flexibility of shipping to more than one elevator within minutes of their farms. Branch lines became less critical to the existence of grain producers as highways and farm truck transportation evolved. Volume and proportional share of grain moved by truck has since expanded drawing from revenues previously received by the railroads.

Branch lines have become relatively costly operations for line-haul carriers. Capital expenditures needed to maintain the branch line roadways have made some of them economically non-viable. Deferred maintenance on those lines has made them hazardous to operate over and required lower train speeds and lighter carloads. It is questionable whether revenues accruing from such lines will equal or exceed fully allocated or even variable costs of operation. The Staggers Rail Act of 1980 has allowed railroads to

eliminate from their systems any portion creating an economic burden on their operations. The Burlington Northern (and other railroads) have since decided that abandonment of parts of their branch line network will reduce costs more than reduce revenues, resulting in an overall improved profit position.

Implications of Branch Line Abandonment

Implications for the Railroads

Elimination of a portion of its branch line network may improve on railroad equipment utilization. Assembling blocks of cars at large elevators on main lines would likely decrease loading times, allowing faster turn-around of equipment. Revenues to the railroad may decrease as some of the grain formerly loaded at the branch line station is diverted to other carriers or other modes. However, at least a portion of that grain may simply be transshipped through a larger facility on a main line or established branch line, resulting in continued revenues to the railroad.

Implications for Shippers and Producers

Upon abandonment of a branch line, shippers on that line are left void of rail service. Most of these shippers are presumably country elevators, although some may be lumber, fertilizer or machinery dealers. Grain shipments must move by truck unless alternate arrangements are made (short line railroad operation, contractual arrangements with abandoning carrier, etc.). Trucks may move the grain at a higher rate than the railroads did, resulting in a lower bid price for the farmers' grains. Producers may find it economical to ship to a different elevator which has rail service and/or higher grain prices. The result would be the eventual demise of the country elevator which has no rail service.

However, the increased trucking cost may be negated by efficiencies resulting from subterminal development and trainload grain shipments. Some producers may not have another outlet for their grain, however, in which case farmers must bear the additional cost of truck service to the elevator.

Implications for the Government

Government agencies, both federal and state, are charged with monitoring the conditions provided by the new quasi-regulatory environment. Rail branch line abandonment must, in the view of government, be in the best interests of the railroads and not put undue social or environmental burdens on the public. Policy implications, however, have been prescribed by the changes in the laws. Railroads have a freer hand in honing their network to achieve company goals, e.g. increased return on invested capital. Government responsibilities have moved away from the strict regulatory scene, somewhat, towards a public welfare position.

The Short Line Railroad Alternative

One alternative to alleviate effects of branch line abandonment is the formation of a short line railroad. An independent railroad operating on a branch line which has been abandoned by a larger carrier may serve shippers more effectively and at a lower cost than the abandoning carrier. It should be noted that a short line railroad is only one of the alternatives available when faced with branch line abandonment. Others to consider are subsidies, contracts, and truck service.

Short Line Railroads in the United States

Over 380 small railroads were operating in the United States in 1978, and represented about 80% of all railroads.[1] Although these railroads are not recognized as corporate giants typical of the railroad industry, they do represent a notable portion of the industry, nonetheless. The term "small railroad" is used due to the many different types of ownership and operating characteristics of such railroads in the United States. The names "small railroad", "short line railroad", and "Class III railroad" are often used synonymously. The Interstate Commerce Commission's classification of railroads uses total revenues as its basis for size determination (Table 1).

No short line railroads are operating in North Dakota at this writing. In fact, very few are known to be operating in the Great Plains states at all. Most small railroads are located in the industrial states of Pennsylvania, New York, Michigan, Ohio, Vermont, Illinois, and Indiana. Other concentrations are located in California, Oregon, Washington, Arkansas, Louisiana, North Carolina, South Carolina, and Georgia's areas. Thirteen states contain well over half of the small railroads in this country.[2]

Commodities hauled by small railroads include non-metallic minerals, pulp and paper products, glass and stone, lumber and wood, coal, and a variety of other commodities. Farm products constitute only 2.5% of the total tonnage hauled by small railroads, compared to 8.4% of total tonnage for all railroads.[3]

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[1]Levive, H.A., C. F. Rockey, C. C. Eby, J. L. Dale, Small Railroads. Economics and Finance Department, Association of American Railroads, p. 1. In this book, (page 10) small railroads were defined as Class III line-haul or switching and terminal roads with revenues of $10 million or less. Railroads identified within this restriction numbered 383.

[2]Small Railroads, Ibid. p. 169.

[3]Small Railroads, Ibid. p. 85

TABLE 1. CLASSIFICATION OF U.S. RAILROADS BY REVENUES, 1979, ICC REVENUE CLASSIFICATION		
ICC CLASSIFICATION	REVENUES ($)	NUMBER OF RAILROADS
I	> 50 Million	40
II	10 - 50 Million	26
III	< 10 Million	238
Unclassified switching and terminal companies, all sizes		176
		480

BRANCH LINES AND OWNERSHIP ALTERNATIVES FOR THOSE LINES

System Diagram Map

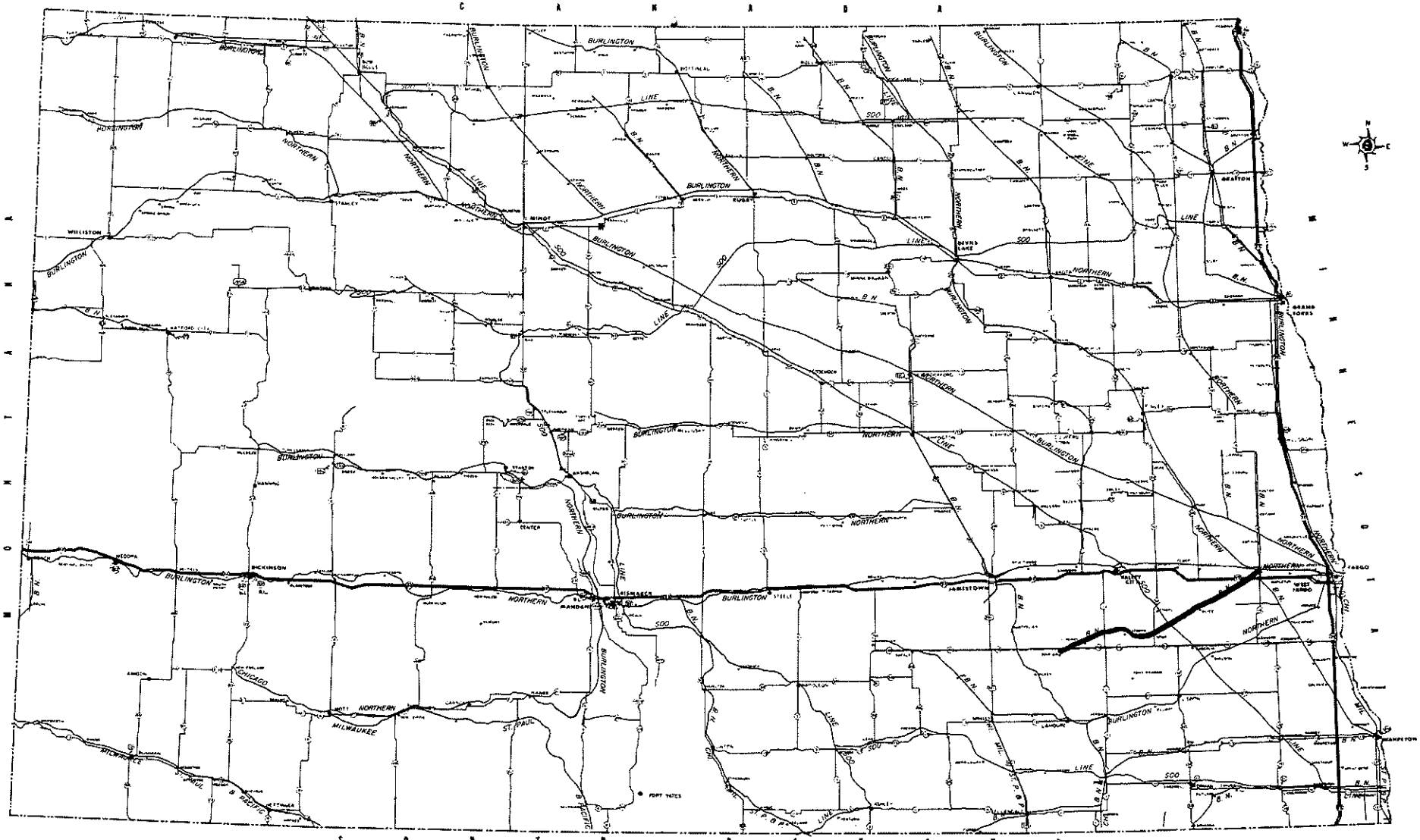
Railroads are required under the Staggers Rail Act of 1980 to submit annually a System Diagram Map which identifies branch lines that may or will be subject to future abandonment. The map illustrates the carrier's entire system for the state and portrays which portions of its system will be filed for abandonment and which sections will be studied as potential abandonments. The intent of the System Diagram Map is to provide all interested parties advance notice of the railroads' abandonment intentions. Shippers and communities are thereby given an opportunity to consider their options when faced with an impending abandonment.

Lines Which Can Be Operated As Short Line Railroads

Any line that has been abandoned or subject to future abandonment can potentially be marked for purchase and operation as a short line railroad. After a line has been abandoned, an interested party may purchase the line for its net liquidation value.[4]

[4]Net liquidation value is defined as the salvage value (either as scrap or for re-use in another segment of the carrier's system) of the remaining track material after abandonment (rail, ties, etc.), less costs of removal and sale.

North Dakota State Highway and Rail Network



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Presumably, the railroad has no use for the abandoned line other than to remove the track material and either sell it as scrap or re-use it on another portion of its system.

Under the Interstate Commerce Commission's Feeder Railroad Development Program, lines in Category 1 of 2 on a carrier's system diagram map can be forced to be sold to a financially responsible party. This program allows branch lines to be acquired by interested parties and converted to short line railroads before they are completely downgraded and need substantial rehabilitation. The Feeder Railroad Development Program is described in detail later in this study.

Potential Owners of Feeder Lines

Preservation of branch lines is of utmost concern to many different groups, but none more so than individual shippers on those lines. Loss of rail service would mean a modal switch for transporting their commodities and probably an increase in their total freight bill. Most of the shippers on North Dakota branch lines are grain elevators, although some machinery and other products may move into agricultural areas by rail. The proportion of grain shipped by truck has increase, but rail is still the predominant mode for many agricultural commodities. Shippers who consider rail service essential to their operation may consider purchasing the line either privately or cooperatively to sustain that service.

Producers of agricultural commodities have vested interests in preservation of rail service to shippers they patronize. If the outlet for their grain is left without rail service, producers and the shipper will both suffer. At the least, the shipper would have to resort to complete truck service, possibly increasing the freight bill. This cost increase would

undoubtedly be passed on to farmers in the form of lower grain prices. This will put the elevator at a competitive disadvantage, causing some patrons to haul to other elevators who still have rail service.

Public ownership of a feeder line is a third alternative to loss of rail service. A community or group of communities on a branch line may consider it in their best interests to continue rail service in their area. Rail service may be essential to the existence of their industrial sector, either in terms of inputs shipped in or products shipped out. In North Dakota, few communities (other than coal-impacted areas) have large tonnages of commodities to ship other than grain. Agriculture is the major component of the economic base of those communities--industry shippers other than country elevators are scarce. Therefore, most communities would not face substantial industrial output decline as a result of abandonment, other than the possible demise of grain elevators. Some communities, however, may envision loss of rail service as a deterrent to future industrial growth in their city.

Non-local investors may envision feeder lines as potentially profitable investments and purchase abandoned branch lines to be operated as for-profit corporations. However, these lines may not have sufficient volume of freight to warrant their purchase, even by shippers or producers. Operating carriers are considering abandoning these branch lines because of the economic burden on the railroad. If these lines are economically questionable today, continued down-grading and volume decreases will only make them more unattractive, even to short line operators.

ADVANTAGES AND DISADVANTAGES OF A SHORT LINE RAILROAD

Short line operations have certain inherent advantages to shippers and/or producers that abandoning carriers cannot provide. These short line railroads would have to operate more economically or provide better service than either Class I rail service or trucks, or they would not be considered at all.

Advantages

Elimination of Class I Labor Union Work Rules

Investment in the railroad plant involves a large capital outlay for fixed facilities. Roadway and equipment purchases constitute a considerable proportion of the total costs of railroad ownership and operation. However, labor costs have grown to be a major portion of both railroad operating costs and total costs. Annual reports of three major carriers in Oregon showed wages[5] paid to persons who ran the trains (engineers, firemen, brakemen, and conductors) amounted to 11.8 percent of all railroad operating expenses.[6] Government officials and railroad labor unions have been blamed for retaining legislation and union contractual requirements which unnecessarily inflate railroad labor costs. It has been stated that labor operating costs for through train operation could be reduced by

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[5]Exclusive of payroll taxes and health and welfare benefits.

[6]Astle, D. J., R. W. Coram, and C. N. Valness, Analysis of Railroad "Train Crew" Labor Costs in Oregon and Estimated Potential Savings. Railroad Division, Public Utility Commission of Oregon. May 1978.

40 percent with no reduction in safety or service if facilitating agreements were made.[7] Some potential areas of cost savings by changing to the short line alternative are revision of the basis of pay (100 mile rule), reduction in crew consist, and elimination of initial and final terminal delay.

One major advantage of a short line operation is that it does not necessarily have to grant union status to its employees. The railroad need only pay the wage necessary to attract qualified workers. Short line operations have a virtual free hand in deciding on employee compensation; workers may be paid strictly on an hourly or salaried basis. Employees can be paid for their full day's work regardless of the train-miles they achieve or the particular tasks they perform. Employees of a short line may also perform many different jobs. For example, workers may be solicited to perform seasonal maintenance of way operations when needed. However, when negotiating with potential employees, care must be taken not to grant benefits that are self-defeating to the organization. This maybe a particularly difficult to achieve when employees were formerly covered under Class I railroad union rules. More than half of all small railroad employees had some kind of union representation in 1979. However, less than five percent possessed all union labor, while 40 percent had all non-union labor.[8]

Equipment Needs for Short Line Railroads

Short line operations obviously would require less equipment than a Class I carrier. Most short lines have considerably fewer miles of track, so maintenance of way equipment needs would be minimal. Major track rehabilitation or upgrading would likely be done by

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[7]Ibid. p. 9.

[8]Levine, Harvey A., et. al., Small Railroads, op.cit.

some outside contractor, while incidental track maintenance would probably be done by the short line employees. The major equipment needs of the short line would be for locomotive power, freight cars, and service vehicles.[9] Short line railroads' equipment needs will depend entirely upon the type of operation and will certainly vary among companies. A likely scenario for a short line railroad would be to purchase a used or rehabilitated locomotive and service vehicles, and to lease freight cars or use cars owned by its connecting carrier.

Local Level Ownership Possible

Local ownership would provide increased incentive for use of the railroad. Due to vested interests in the financial success of the company, a cooperative attitude would be more likely to prevail where owners are actually users of the operation. Increased volume on the line may be a key factor in equipment utilization, so ownership/shippers would be more likely to use their railroad than revert to competing modes. Also, local financing may be more readily available to a firm owned and operated by community members. Local owners of a short line operation also may be more willing to tolerate business downswings and erratic levels of net returns if their business or community depended on rail service. Future industrial growth in an area may be spurred if rail service is continued in a community. Factories or plants requiring railed-in raw materials or railed-out finished products will be more receptive to a community which is backing the ownership and operation of a railroad.

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[9]Patton, Edwin P., and C. John Langley, Jr., Handbook for Preservation of Local Railroad Service. DOT-TST-77-34, U.S. Department of Transportation. January 1977.

Disadvantages

Although organizing a light density rail line as a short line railroad may have attractive features to potential owners and shippers, it does have associated shortcomings. Such an operation would be a lower volume/high fixed cost enterprise compared to large carriers. Capital outlays involved with purchase of a locomotive, equipment, and roadway may prevent the operation from ever being started. Once in operation, the short line would have to rely on rates and divisions for its revenue base.[10] Without a favorable division from the connecting carrier, the short line may be unable to operate unless it surcharges shippers or receives an operating subsidy from a third party.

A new, smaller railroad may have difficulty attracting qualified personnel for company employees. The non-union status of the short line, although attractive to owners/operators, may be a negative factor when attempting to hire crews and operations personnel. These new railroads presumably would be located in rural areas where qualified railroad people may not live. A higher wage may be needed to coax non-local people to work for the new operation.

Short line railroads in agricultural areas like North Dakota would be primarily dependent on the movement of one commodity--grain. This would be the major disadvantage of these types of operations in North Dakota. Monthly grain shipments in the 1979-80 crop marketing year ranged from a high of 66.9 million bushels in October to

[10]Short line railroads in North Dakota, like most others in the United States, would interchange cars with one of the larger railroads operating in the state. Revenues generated from shipping the entire distance to market would be apportioned among the cooperating carriers as agreed by the participating parties.

a low of 24.1 million bushels in March.[11] Dependence on a single commodity which is produced seasonally and easily diverted to other modes is a precarious situation for a short line railroad.

SUMMARY

Short line railroads in the United States have several advantages inherent in their operations. Relaxing restrictive union labor regulations would likely lower the short line's operating expenses, and equipment needs would be less due to the small scale of operations. Local ownership of the railroad may provide for easier access to financing and allow better relations between the carrier and shippers. Also, railroad service in a community may aid in industry development.

Disadvantages, however, are present as well. Initial investment in the railroad right-of-way and equipment may be prohibitive. Negotiating favorable divisions of revenues may be difficult, particularly if existing railroads operate in any semblance of a monopoly position. Also, short line operations in North Dakota would be hauling primarily grain, a seasonal and very mobile commodity.

[11]Griffin, Gene C., "North Dakota Grain and Oilseed Transportation Statistics, 1979-80". UGPTI Report No. 36. December 1980.

OWNERSHIP CONSIDERATIONS

Investing in a railroad operation is no small undertaking by any standards. Before potential North Dakota short line railroad owners put capital into a particular line, a complete feasibility study would be required to evaluate its economic viability. Some of the ownership considerations that would need evaluation when determining the potential for a short line operation are reviewed in this section.

Physical Condition of the Roadway

Many North Dakota branch lines are in a dire need of improvement, either through an accelerated maintenance program or outright rehabilitation. Years of neglect and deferred maintenance have made the lines more dangerous to operate over, requiring slower train speeds or an embargo of the line. Also, when North Dakota's rail network was constructed, average car-loadings were considerable lighter than today.

Rail

Many branch lines (or portions of them) have light rail. New 100 ton hopper cars cannot be shipped regularly over rail lighter than approximately 72 lbs., and only under certain conditions on rail lighter than about 90 pounds.[12] In the rehabilitation or upgrading process, the cost of new or relay (used) rail is a major portion of the total costs. Therefore, the weight of existing rail becomes a prime consideration when deciding on the short-term viability of a branch line.

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[12]Rail weight is measured in pounds per lineal yard. These are only approximate rules of thumb; many other factors affect roadway strength such as tie condition, thickness of ballast and subgrade, drainage, etc. All these components combined determine roadway strength.

Tie Condition

Probably more important than weight of rail is the quality and condition of crossties under the rail. The function of ties is to properly align the rail and evenly distribute the weight of trains downward throughout the roadway. Without proper placement and function, the rail can be pushed downward through the ties and destroy the roadway, eventually causing derailments.

Branch lines are often plagued by ties that have been neglected or improperly maintained. The regular maintenance cycle has not been followed; therefore, many broken or split ties exist or are simply so old they no longer can support heavy carloadings.

Ballast

Ballast consists of the crushed rock or gravel the ties are set in. Its function is to support the weight of trains and track and transfer that weight evenly downward. Ballast also holds the rail alignment laterally and provides drainage to direct water away from the roadway. To extend tie life and permit safer operation of trains, proper ballast should be maintained. When ballast becomes fouled with dirt or vegetation, or unnecessarily crushed, it should be replenished with new crushed rock.

Other Roadway Considerations

Structures such as bridges and culverts may need rehabilitation if they are deemed unsafe over which to operate. An individual inspection of each structure would be necessary to determine needed rehabilitation or upgrading.

The roadway subgrade must be sufficiently landscaped to allow water to drain away from the track. Excess water in the ballast, subgrade, or around ties will cause accelerated tie deterioration and unnecessary vegetation growth.

Freight on the Branch Line

The success of a short line railroad, as with any for-profit entity, will ultimately depend on its revenue/cost position. Railroad costing methodologies exist to estimate one side of that situation, but estimating revenues is not such a straightforward procedure. Unpredictable volume on branch lines has been a problem for railroads in the past. For a private or cooperatively owned short line that depends upon revenues solely from that branch line, variability in volume would be even more of a problem. The firm would have no other regions or shipments to compensate for the variable shipping patterns. Some of the freight-related concerns of a short line considering operation would be the number and types of shippers on the line, expected volume attainable from those shippers, car types that would be used, available rail siding at each station, and historic modal share.

ACQUISITION PROCEDURES AND ALTERNATIVES

Shippers and communities impacted by rail abandonment have some alternatives to consider when faced with loss of rail service. However, it should be noted that railroads are considering branch line abandonment because of operating losses or substantial rehabilitation necessary on a line. Any alternatives that are available to impacted parties will have an attached cost--no easy or inexpensive solutions are evident.

Alternatives Before and After Abandonment

Prior to abandonment, a shipper may contract with a carrier for a specified level of service and rate (contract rates were illegal before the Staggers Act of 1980). The line may also be surcharged to bring revenues up to reasonable costs of operating the line. Shippers or communities may purchase a line under the Feeder Railroad Development Program before the line is completely downgraded, if the ICC determines that either public convenience or necessity permit or require the sale. The feeder line program will be discussed in more detail later in this manuscript. Finally, affected parties may subsidize the line by sharing the costs of rehabilitation or operation of the line.

After the ICC has approved the abandonment, the public has one final option to preserve their rail service. Parties who wish to acquire or subsidize the line must submit their offer within 10 days after the initial decision granted by the Commission. Otherwise, the abandoning railroad can begin salvage operations on the line.

Feeder Railroad Development Program

The Staggers Rail Act of 1980 established the Feeder Railroad Development Program to allow purchase of rail lines potentially subject to abandonment before complete downgrading by the operating carrier. The line in question must have carried less than three million gross tons per mile in the proceeding year and be listed in Category 1 or 2 on the carrier's System Diagram Map. Also, the ICC requires that the public convenience and necessity must permit or require the sale, and that the line be sold to a "financially responsible" party.

At this writing there is reportedly only one feeder line in the United States which has been purchased by an independent operator under the Feeder Railroad Development Program.[13]

State Involvement in Purchase or Operation

The Railroad Revitalization and Regulatory Reform Act of 1976 (4R Act) provides funds to be administered by the state and used to: (1) finance acquisition or rehabilitation of rail lines; (2) provide substitute transportation services to reduce abandonment impacts; (3) construct rail-related facilities to streamline transportation services; (4) provide for revision and updating of the State Rail Plan; and (5) cover costs of administering the program. However, North Dakota, for example, has never received over $1.6 million in federal aid for rail assistance. Considering that North Dakota has about 1400 miles of trackage identified as potential abandonments on the System Diagram Map (7-1-81), federal aid does little to mitigate abandonment impacts.

Purchase Price of a Line

The Interstate Commerce Commission ultimately has the final decision in determining the value of a line to be sold as railroad property. In an ICC abandonment proceeding, one of the considerations in the decision is the value of the line as non-railroad property, or the salvage value if the line is torn up and sold on a piecemeal basis. This value is referred to as Net Liquidation Value (NLV). It is computed as the difference between the

[13]Traffic World. August 23, 1982.

value of the track material and roadway less costs of removal and sale. Unless the line was purchased for its Going Concern Value,[14] the buyer would have to pay NLV for the line. The abandoning railroad and all protestants submit evidence supporting their version of NLV or rebutting the other's data.

CASE STUDY OF A NORTH DAKOTA BRANCH LINE

A North Dakota branch line identified for possible abandonment was selected and evaluated as to its economic potential as a short line railroad. For details concerning this analysis, see "Analysis of Short Line Railroad Development in North Dakota," by Dan Zink.[15]

A short line operating in North Dakota would desire market conditions similar to those sought by a large railroad--captive and isolated shippers with fixed facilities. Depending on the type of ownership structure, operations of the short line would like a great deal of flexibility in pricing without fear of traffic diversion to other modes. Mobility of the commodity would affect the ability of competing modes to penetrate the railroad's market. Also, if shippers on the line have large fixed facilities, they will be unable to freely relocate their plant if faced with increasing transportation costs. The short line would prefer to interline with a minimum number of railroads, thus sharing revenues with fewer carriers.

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[14]Going Concern Value is the value of the property in railroad use. If a line is being abandoned, however, it is unreasonable to think that Going Concern Value would be greater than Net Liquidation Value.

[15]Upper Great Plains Transportation Institute Report, forthcoming.

If possible, the short line would like to connect with two or more different carriers. A more attractive division of the revenues may be obtained if the short line can interchange with both the Burlington Northern and the Soo Line. Both railroads would be interested in hauling grain on its system, so the short line may receive a better division as the connecting carriers "bid" for the grain. Due to tremendous economies of utilization available to railroad operations, the short line would like to be located in an area of high crop concentration. Increased volumes would help spread the operation's fixed costs over more units and contribute to better utilization of plant and equipment.

The line chosen for analysis in this study was the Burlington Northern's Casselton to Marion branch line located in southeastern North Dakota (Figure 1). This 61 mile line originates in Cass County at Casselton, North Dakota, and extends west-southwestward to Marion in LaMoure County. The line is rated at Class 3 (40 mph). Two trains per week service six stations and ten shippers--five grain elevators, two lumber companies, a fertilizer company, a farm implement dealer, and a hardware store.[16] Rail service is utilized both inbound and outbound.

The Casselton-Marion line was selected due to its geographic position in a concentrated grain producing area and its competitive position between railroads. Southeastern North Dakota is a relatively heavy grain producing area, and traditionally has a high proportion of truck shipments in relation to other areas in North Dakota. The line is presently owned and operated by the Burlington Northern, and is crossed approximately at its midpoint by the Soo Line. Accessibility to two competing railroads could be attained by construction of an interchange with the Soo Line.

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[16]1981 State Rail Plan Update Appendices, Intermodal Planning and Rail Assistance Division, North Dakota State Highway Department. (Non-grain shippers were identified as in existence in 1979; the grain elevators were all active in the 1980-81 year.)

Historic traffic data and total grain movements from elevators on the Casselton to Marion branch line are presented in Tables 2 and 3, respectively.

TABLE 2. ORIGINATING CARLOADS, TERMINATING CARLOADS AND REVENUES, CASSELTON TO MARION BRANCH LINE, 1978-80.

YEAR	ORIGINATING CARLOADS	TERMINATING CARLOADS	REVENUES
			($)
1980	1025	45	1,696,000
1979	637	38	864,000
1978	738	38	799,000

TABLE 3. GRAIN ORIGINATED FROM COUNTRY ELEVATORS LOCATED ON THE CASSELTON TO MARION BRANCH LINE TO ALL DESTINATIONS, SELECTED CROP YEARS.

ITEM	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81
	BUSHEL	BUSHEL	BUSHEL	BUSHEL	BUSHEL	BUSHEL	BUSHEL
Hopper	1,197,500	987,537	889,723	1,134,610	1,765,920	2,092,847	2,374,287
	(40%)	(38%)	(46%)	(63%)	(83%)	(71%)	(88%)
Box	1,765,889	1,582,980	1,056,043	660,179	354,258	858,709	320,645
	(60%)	(62%)	(54%)	(37%)	(17%)	(29%)	(12%)
Total Rail	2,963,389	2,570,517	1,945,766	1,794,789	2,120,178	2,951,556	2,694,932
	(72%)	(63%)	(59%)	(56%)	(39%)	(45%)	(51%)
Truck	1,159,136	1,517,664	1,324,808	1,400,777	3,331,781	3,607,910	2,628,292
	(28%)	(37%)	(61%)	(44%)	(61%)	(55%)	(49%)
TOTAL BUSHEL	4,122,525	4,088,181	3,270,574	3,195,566	5,451,959	6,559,466	5,323,224
	(100%)	(100%)	(100%)	(100%)	(100%)	(100%)	(100%)

SOURCE: Upper Great Plains Transportation Institute unpublished Grain Movement Data.

The largest capital expenditures for start of railroad operations on the branch line are purchase and rehabilitation of the roadway. The calculation of Net Liquidation Value (NLV) of the branch line right-of-way is presented below. The NLV is the eventual price a potential short line operator would have to pay for the branch line track structure and property (Table 4).

TABLE 4. NET LIQUIDATION VALUE - CASSELTON TO MARION BRANCH LINE	
REVENUES FROM SALVAGE:	
Rail	$1,829,422
Ties	640,500
Land	332,085
Misc. Track Material	577,236
GROSS LIQUIDATION VALUE	**$3,379,243**
LESS:	
Removal Costs	$1,288,320
Freight (rail and scrap)	273,357
	$1,561,677
Gross Liquidation Value After Removal Costs and Freight	$1,817,566
Less Carrying Costs for Six Months	136,317
NET LIQUIDATION VALUE	**$1,681,249**
OR	**$27,561 PER MILE**

The weight of rail on the Casselton to Marion branch line varies from 72 to 131 pounds per yard (Table 5). An evaluation of the proportion of rail needing replacement in the rehabilitation process is necessary due to the huge capital outlays necessary when relaying rail. Twelve miles of rail would require replacement for regular movement of 26 or 52 car trains. However, for present traffic levels, all rail is sufficiently heavy for operations if the remaining track structure (ties, ballast, etc.) is adequate.

TABLE 5. RAIL WEIGHT AND APPROXIMATE MILEAGES, CASSELTON-MARION BRANCH LINE.

RAIL WEIGHT (LBS./YARD)	MILES
72	12
90	28
100	7
112	8
131	6

Two estimates of the track rehabilitation process were performed. First, costs of accommodating present traffic levels were estimated. Second, rehabilitation costs necessary for regular movement of 26 car trains were estimated. These estimates with costs of each track component are presented below (Tables 6, 7, 8, and 9).

TABLE 6. TRACK REHABILITATION COSTS	
Present Traffic Levels	
Rail Replacement	-0-
Ties	$ 363,000
Surfacing	244,000
	$ 607,000 or $9,951 per mile
Future Traffic Levels (26 car trains)	
Rail Replacement	$ 873,229
Ties	1,479,000
Surfacing	915,000
	$3,267,229 or $53,561 per mile

TABLE 7. CONSTRUCTION AND OPERATING COSTS--CASSELTON TO MARION SHORT-LINE RAILROAD.					
FIXED COSTS					
ITEM NAME	COST	USEFUL LIFE	ANNUAL REPAIRS	SALVAGE VALUE	ANNUAL EQUIVALENT COST
Roadway	1,681,249	50	335,020	3,000,000	590,190
Rehabilitation	607,000	50	-	0	85,102
Locomotive	79,000	15	21,330	50,000	33,051
Tools	4,000	5	-	0	1,165
Vehicles	20,000	5	1,000	2,000	6,523
Office Equipment	5,000	10	-	0	959
Manager	39,000				44,460
Insurance	20,000				22,800
TOTAL FIXED COST					**784,250**

TABLE 8. VARIABLE COSTS		
ITEM NAME		**COST**
Bookkeeper		$ 13,000
Engineer		28,600
Brakeman		23,400
Office Supplies		1,000
Fuel		33,000
Total Production State Costs		99,000
	Car Rental Charges	50,000
	Interest on Operating Capital	8,769
Total Variable Costs		**157,769**
TOTAL REVENUE		**$150,000**

TABLE 9. RESULTS OF THE MODEL	
Total Fixed Cost	$ 784,250
Total Variable Cost	157,769
Total Cost	942,019
Total Revenue	150,000
TOTAL NET REVENUE	**-$792,019**
Average Fixed Cost	784
Average Variable Cost	158
Average Total Cost	942
Average Revenue	150
AVERAGE NET REVENUE	-$ 792

Conclusions

Although short line railroad operations have distinct operational advantages over branch line ownership by larger carriers, they cannot achieve the economies of size available to the huge corporate operations. Large volumes shipped by Class I carriers allow the investment in physical plant to be spread out over many units. Short lines in North Dakota would not be afforded the same luxury.

The revenues from operations for the Casselton to Marion branch line are woefully inadequate to justify formation of a short line railroad. Purchasing and rehabilitating the roadway constitutes a prohibitively high fixed capital investment. Depending on the interest rates used, level of rehabilitation, and revenues per car, a shortfall of approximately $500,000 to 1.1 million dollars per year is realized. Also, some costs have not been included in the analysis. For example, to ship cars on the Soo Line, an interchange would have to be constructed near Lucca, where the Burlington Northern and Soo Line tracks cross. Also, organizational costs are not included, as well as any property or other taxes due.

A short line railroad could not be formed and operated profitably on the Casselton-Marion branch line without some capital from a third party for acquisition, rehabilitation or operation. Assuming utilization of large hopper cars, an additional 15 to 30 cents per bushel would have to be extracted from a third source such as shipper surcharges or state subsidies. Large shipper surcharges would shrink the short line's market area as producers shipped their grain to competing elevators having higher grain prices. This decrease in volume would only compound the railroad's problem of low fixed plant utilization.

Any institution considering organizing a short line railroad in North Dakota should perform a complete feasibility study of the line under consideration. Costs of operation and realistic revenue projections must be obtained to evaluate the organizations profitability. However, the results of this study suggest there are likely to be more inexpensive alternatives to branch line abandonment than organizing the line as a short line railroad.

SELECTED SHORT LINE RAILROAD REFERENCES

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