

ALASKA LEGISLATURE COMMITTEE FILES 1987-1988 8672

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# **CORRECTION**

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(1) the present value of the cash flow which can reasonably be projected from continued development of the Railroad's non-operating real estate, and (2) the present value of the cash flow which could reasonably be projected from alternate use of the Railroad's operating real estate beginning ten years after transfer.

Most of the Alaska Railroad's real property not required for rail operations is currently leased to others, and there was no reason to assume that a purchaser of the property would change this practice. Jackson-Cross, therefore, based its appraisal upon the assumption that the Railroad's real estate would be leased rather than sold. To the extent that any current rents are below market levels, the lease assumption explicitly considers that fact. USRA assumed that the State will be required to honor the terms and conditions of these leases. They were thoroughly reviewed and analyzed, and USRA has considered their effect in determining the value of the Railroad's real estate.

Jackson-Cross then assumed that, except as prevented by existing leases, rents would be set at market levels. It

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(Continued)

continued operations valuation. As discussed later, the Railroad lacks clear title to much of the right-of-way so that it would no longer be entitled to income from such property upon conversion to alternate uses. As to right-of-way properties where the State will acquire clear title under ARTA, it was not considered feasible to attempt to ascribe any separate value to this potential income, since the highest and best alternate use might well either (1) preclude the continuance of the easement or permit or (2) result in the lessee, rather than the fee owner, collecting such easement or permit income.

estimated the net revenues that most likely would be realized from a normal leasing and management program as well as the period of time an investor would perceive as necessary to realize those net revenues. Jackson-Cross then discounted these projected net revenues to consider the cost of money over time and the risk of uncertainty that those projected net revenues would, in fact, be realized.\*

USRA classified the Railroad's real estate into "non-operating" and "operating" based on current railroad operational requirements with reasonable estimates for operational expansion. All land presently leased to others was classified as non-operating, including lands leased to tenants who are also shippers on the railroad.

There is no definitive inventory available of exactly what constitutes the property of the Alaska Railroad. USRA compiled maps from the Railroad's records to correspond with an inventory estimate which had been prepared by the Department of Transportation in 1981. Additional inventory information was contained in the 605(a) Report. However, despite the best efforts of all parties involved to assemble whatever inventory data are available, substantial questions still remain.

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\*In practice, the lease assumption produces the same value as an assumption that the real estate would have been sold over a period of years, subject to the existing leases. This is because the prices investor(s) would be willing to pay are a function of the rental income that could be earned, taking into consideration both present rents and projected future rent increases.

Most notable of these questions is the definition of exactly what rights will ultimately be conveyed to the State of Alaska. Depending on future adjudication or negotiation, there are many instances where the State may receive less than fee title to portions of the Alaska Railroad's real estate, particularly its right-of-way. Exhibit 1 to the 605(a) Report summarizes existing claims against the property. According to that exhibit, prepared by the Anchorage office of the Bureau of Land Management, more than half of the Alaska Railroad's right-of-way passes through lands which were patented to private parties or to the State without a specific reservation for the Railroad's right-of-way.\* In a limited number of areas, mining claims have also been filed which are near to or encroach upon the right-of-way. Further, in other locations, ARTA provides that the State will only receive an "exclusive use easement" to certain portions of the right-of-way.

Therefore, in an alternative use scenario, the Railroad would have no legal interest to transfer in considerable portions of its right-of-way. Accordingly, in determining the value of the Railroad's operating real estate for alternate uses after ten years, Jackson-Cross was instructed not to include value for any parcels where ownership would disappear upon cessation of rail

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\*Of a total of 619.11 miles of right-of-way, 142.34 miles have been patented to individuals; 137.87 miles have been patented to the State; and 91.25 miles have been tentatively approved for patent to the State upon survey. An additional 85.92 miles have been selected by the State, and another 1.3 miles appear to have been patented to both private parties and to the State.

operations. Further, because clear title existed for very little of the right-of-way, Jackson-Cross was also instructed not to consider "corridor value" for the Alaska Railroad's right-of-way in its alternate use determination.

Additionally, significant portions of the right-of-way, as well as certain parcels of land adjacent to or away from the right-of-way, are subject to claims under the Alaska Native Claims Settlement Act of 1971 (ANCSA) and the 1906 Native Allotment Act. These claims will not have been settled prior to the issuance of this report. It is not possible for USRA to know the final outcome with respect to these parcels. Therefore, as further discussed in Appendix A, USRA has analyzed the value of these parcels separately and has evaluated their impact on the Railroad's fair market value.

Jackson-Cross determined the present value of the Railroad's non-operating real estate to be \$47.8 million. Jackson-Cross determined that the present value resulting from alternate use of the Railroad's operating real estate after a hypothetical discontinuance of rail operations is \$7 million.

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NATIVE CLAIM SELECTION ANALYSIS

The Alaska Railroad's real estate inventory includes certain parcels which are subject to claims under the Alaska Native Claims Settlement Act of 1971 (ANCSA) and the 1906 Native Allotment Act. Section 606(b)(1)(A) of ARTA directs that "[d]uring the ten months following the date of enactment of this Act, . . . the Secretary of the Interior, Village Corporations with claims of valid existing rights, and the State shall review and make a good faith effort to settle as many of the claims as possible." Failing settlement, ARTA Section 606(b)(2) further directs that the "Secretary of the Interior shall complete the final administrative adjudication required under this subsection not later than three years after the date of enactment of this Act."

According to data furnished by the Alaska Railroad and the Anchorage Office of the Bureau of Land Management, Native claims have been filed for the following ten parcels.

<u>LOCATION</u>	<u>ACRES</u>	<u>GRAVEL RESERVE</u>	<u>ROCK RESERVE</u>
EAGLE RIVER	1596	Yes	No
BIRCHWOOD	978 247	Yes	No
EKLUTNA	605 177	Yes	Yes
MATANUSKA	238 349	No	No
PITTMAN	140 817	Yes	No
BROAD PASS	561 4	Yes	No
HEALY	123 474	No	No
NENANA	231	No	No
HOLY CROSS	60	No	No

No negotiated settlements have been reached, and the ultimate disposition of these parcels cannot be known at this time. However, despite these unresolved issues affecting the basic inventory to be valued, ARTA directs that USRA report one number representing the Railroad's fair market value.

At this time, there are considerable uncertainties as to whether any of these parcels will ultimately be conveyed to the State. The possibilities range from conveyance of all or a substantial portion of these parcels, which would suggest an upward adjustment to value of as much as \$3.2 million,\* to conveyance of only operating real estate and the loss of access to currently used rock and gravel reserves, in which case a reduction in value approximating \$1.8 million\*\* would be appropriate. If the status quo was maintained -- that is, if the Railroad was conveyed lands underlying rights-of-way and facilities and the continued right to withdraw rock and gravel as needed from currently utilized reserves -- no adjustment to value would be appropriate. Moreover, some parcels may be conveyed

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\*Jackson-Cross estimated the fair market value of the Railroad's total real estate inventory with and without the parcels subject to Native claim selection. From this analysis, USRA determined that the Railroad's fair market value would be increased by \$3.2 million if all parcels subject to Native claim selection were conveyed to the State. This estimate assumes all the previously described ARTA terms and conditions.

\*\*USRA also considered the impact on value if the Railroad were to lose all of its present rights to withdraw gravel or rock from these parcels. While precise estimates are not available, increased costs for using alternate sources of rock and gravel would reduce the Railroad's fair market value by about \$1.8 million.

only if, in subsequent negotiations, the State agrees to exchange other State lands for such parcels.

In light of this broad spectrum of unknown and virtually unpredictable future events, USRA can find no basis for assuming that a prudent investor would pay for the speculative possibility that significant portions of the Native claim parcels would be conveyed in the future. Therefore, we consider that it is inappropriate for our fair market value determination to include any amount ascribed to these parcels. We feel that this conclusion is a fair balancing of both the downside risk that the Railroad might lose access to the gravel and rock reserves and the upside possibility that at least some of these parcels beyond those directly utilized in support of current rail operations might ultimately be conveyed to the Railroad in fee.

## Inventory and Condition Assessment

### EXECUTIVE SUMMARY

The results of our examination of the fixed facilities and equipment of The Alaska Railroad, including analysis of the data provided by the United States Railway Association and The Alaska Railroad, and information obtained by on-site inspections and interviews with officials of The Alaska Railroad, are summarized as follows:

The inventory of the fixed facilities has been prepared using The Alaska Railroad records and information furnished verbally by knowledgeable railroad personnel. This information was supplemented by sample inspections, but actual physical counts were beyond the scope of this effort. The track chart, yard maps, timetable and certain estimated counts furnished by the railroad are the basis for the inventory of track materials. The total quantities of this material are reasonably accurate, although there may be some insignificant variations in sub-total quantities of the smaller weight rail and associated track materials. Total counts of rail in track are within 0.7 percent of the reported total mileage of the railroad. Bridge, trestle, culvert, tunnel, building, marine facility and highway crossing schedules or summaries were prepared from lists furnished by the railroad. Communication and signal information was furnished in part verbally and from records furnished by the Engineering Department of the railroad.

The track structure of the railroad appears to be in relatively good condition for present day tonnages and train speeds. Most of the 115 lb. RE rail laid on the main line and Whittier subdivision is in relatively good condition with only minor wear and would be suitable for cropping, welding and relaying in Class 1 railroad branch lines or even low tonnage mainline tracks. However, except for some 115 lb. turnout material and a relatively few 13 inch double shoulder tieplates, other track materials would probably not be reusable on railroads in the "lower 48." The bridges including the wood trestles are in good condition. Most railroad communications are transmitted through a modern micro-wave system, including but not limited to, radio equipped locomotives, maintenance of way and automotive equipment supplemented by approximately 150 portable type radio receiver-transmitter sets.

Spending in recent years for rail, ties, ballast and surfacing appears to have been adequate to properly maintain this railroad. However, because of the overall age of the crossties and the lighter weight rail, it appears that some increase in spending is warranted for the installation of these materials. Both capital and expense spending have been adequate to properly maintain bridges, trestles and culverts, marine and communication facilities. Operating expenses for these facilities should continue at about the same level. However, capital spending will have to be increased somewhat if the railroad should be

transferred from Federal ownership. Additional expenditures will be required to correct OSHA and State of Alaska building code violations.

To estimate the Railroad's alternate use value, costs have been estimated in 1983 dollars to dismantle the tracks, to load the material (excluding crossties and ballast) into cars, and to transport it to the port at Whittier. At current scrap prices, the cost of picking up, loading, moving to port and shipping to a location of a quantity buyer would exceed the sale value of all types of steel scrap. Therefore, this report provides two options; one for handling only that material, 115 lb. reusable rail, turnouts and tieplates, with a positive resale value, and the second for reclaiming all track materials (including all steel scrap) except crossties, timber and ballast, regardless of value. Because the cost of dismantling the bridges, trestles and culverts and moving the reclaimed material to a marketplace would exceed the sale value, it is assumed that these structures would remain in place (except for the Tenana River Bridge discussed in detail at page 64). The micro-wave communication system would probably be of value to some public body or a private communications company "where is, as is."

The inventory of equipment has been prepared using The Alaska Railroad records, supplemented by on-site inspections and interviews with selected officials of the Railroad's Mechanical Department. Representative samples of each general category of

equipment were inspected and formed the basis for judging the condition of equipment.

The fleet of 62 locomotives, excepting the five GP-40-2 locomotives delivered in May 1983, is generally in poor to fair condition. Locomotives are maintained on an as needed immediately basis or on an as funded basis. Due to the relatively low annual mileage, the Railroad has managed to maintain locomotives without any major planned maintenance/overhaul/rehabilitation programs.

The passenger fleet of 52 cars is generally in fair condition with the exception of the recently rehabilitated all-electric cars which are in very good condition and which represent 20 percent of the fleet. The passenger car fleet is well maintained, but again without planned maintenance/rehabilitation programs.

The freight car fleet of 1,642 cars ranges in condition from new to not fit for service or too old for interchange. By the end of 1983, 46 percent of the fleet will be prohibited in interchange. These cars are also maintained on an as needed basis.

The highway vehicles, most of which are owned by the General Services Administration and leased to The Alaska Railroad, are generally in good condition and well maintained. Miscellaneous equipment such as snow plows, locomotive cranes and spreaders are

generally in fair condition and maintained/repaired as required. The cabooses have all been rebuilt and are in good condition.

The maintenance of way equipment is generally in fair to good condition and well maintained. Formal records for equipment maintenance are not kept by individual piece of equipment; therefore, maintenance history of equipment is difficult to determine.

The shop equipment, such as turret lathes, wheel machines, armature extractors, boring mills and drill presses, is in fair to good condition. Shop overhead cranes need general overhaul and repair and the drop pit needs total rehabilitation. The Alaska Railroad is just beginning to develop planned maintenance programs for shop equipment.

We assessed equipment condition from the point of view of service life and maintainability to provide the required service for the continuing operation analysis, and we have categorized equipment by type, quantity, scrap or reusability based upon current condition and age for the alternative use scenario.

### Conclusions

The following table summarizes our analysis of projected operating expenses and capital expenditures which will be required from 1984 through 1993 to maintain the railroad's fixed facilities and equipment in adequate condition for the forecasted traffic.

PROJECTED OPERATING EXPENSES  
AND CAPITAL EXPENDITURES

Facilities & Equipment  
(Millions of 1983 Dollars)

<u>Year</u>	<u>Operating Expenses*</u>		<u>Capital Expenditures**</u>
	<u>Engineering</u>	<u>Equipment</u>	
1984	10.56	9.38	14.00
1985	10.58	10.71	14.00
1986	10.68	10.92	14.00
1987	10.76	11.11	14.00
1988	10.96	11.30	14.00
1989	11.06	11.50	13.50
1990	11.16	11.50	13.50
1991	11.12	11.50	13.50
1992	11.28	11.50	13.50
1993	11.45	11.50	13.50
Totals	109.61	110.91	137.50

\* Excluding depreciation.

\*\* Includes expenditures required for compliance with OSHA as well as state and local codes.

The following describes the results of our analysis of the net liquidation value of the fixed facilities and equipment of The Alaska Railroad. These results are provided in two options:

Option No. 1-----\$13,925,000  
(does not include any scrap track materials)

Option No. 2-----\$11.639,000  
(includes all metallic scrap track materials)

## INVENTORY AND CONDITION ASSESSMENT

### Rail

Track materials comprise the major element of the fixed facility inventory, of which the biggest and most valuable item is the 115 lb. RE rail. Most of this rail was rolled by Colorado Fuel and Iron Company in the early 1950's and laid during the same period. Although much of this rail has now been in track for over thirty years, wear, except on the sharper curves, has not been appreciable due to the low tonnages handled. See Traffic Density Charts, Appendix II, Exhibit 41. A sampling of rail head wear measurements were taken on both heavy and light tonnage lines which carried 7.90 and 2.60 million gross tons respectively in 1982. These measurements indicate relatively light wear except on the sharper curves where flange wear is appreciable. See Appendix I. Exhibit 1.

The detected defective rail history is relatively good and presents no problem. Prior to 1978 the Alaska Railroad operated rail defect detector equipment over its lines once every five years, but since that time they have been operated annually except for 1978 when two inspections were made and 1979 when none was conducted. During the five-year period from 1978 through 1982, these inspections detected a total of 147 115 lb. rail defects which includes 23 defects caused by outside sources, i.e., engine burn fractures, defective welds and broken bases.

See Appendix I, Exhibit 2. For this period an average of 5.17 defective rails per year were detected per 100 miles of main track, laid with 115 lb. rail, including the Whittier subdivision. This history does not adversely affect the suitability of this rail in its present service or for relying on light tonnage tracks.

On-the-ground inspections revealed that, except for rail laid on curves of four degrees or more, the main line 115 lb. rail is in good condition with very little bending at the joints. See Appendix II, Track Pictures. Some chipping of the rail head running surface at the joints was observed which can be corrected by welding for its present usage or by cropping<sup>1/</sup> for relayer use. The railroad is turning and renewing rail on curves as required. Much of this worn reclaimed rail is then relaid in yard, industrial and storage tracks.

This 115 lb. rail laid on the main line and the Whittier Subdivision is in such condition that, with the projected program, it will adequately carry present and projected traffic levels with spot renewals on curves and replacement of defective rails as they occur. However, some of this rail will be removed from the main line in the next ten years in order to replace light rail in yard and siding tracks. Most of this 115 lb. rail

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<sup>1/</sup> Cropping a rail means sawing off approximately 18 inches on each end which eliminates the worn joint area.

is of such quality that, if it were to be removed, it could be cropped, welded into long strings and relaid in light tonnage main tracks, branch lines, sidings or yard tracks.

The inventory of rail was developed by using the track chart, the timetable, yard valuation maps, actual lengths of track and quantities of rail by section all furnished by The Alaska Railroad. Since the lengths of all tracks other than the main were provided from clearance point to clearance point or end, a factor was applied to account for the rail used on the turn-out side to the clearance point. See Appendix I, Exhibit 3. Half of this turnout rail is considered scrap to allow for worn stock rails and curved lead rails. Also, most of the rail on curves of four degrees or more is considered not reusable, and, therefore, is classified as scrap. Those scrap rail assumptions for turnouts and curves including spirals should adequately compensate for the occasional other rails with engine burns or other defects disqualifying them for main or branch line use.

The calculated length of all rail presently in track is 658.0 track miles. Inasmuch as there is no market for large quantities of rail sections of 90 lbs. or less, all rail other than the 115 lb. is considered scrap which amounts to a total of about 15,900 net tons including an estimated 238 in storage on the ground. There is approximately 14,800 net tons of 115 lb. scrap rail which is about 14.1 percent of the total of this rail presently in track. In addition, there is an estimated 435 tons of

reusable, hereafter referred to as "fit," rail in storage. The method used for calculating tonnage figures is shown in Appendix I, Exhibit 4. The fit 115 lb. rail in track and in storage amounts to approximately 90,400 net tons. A breakdown for all rail by section and track is shown in the Appendix I, Exhibit 5.

In addition, there is a small quantity of new 115 lb. rail stored on the ground principally at Anchorage. Fit and scrap material in storage was estimated by the Railroad which provided the quantities of stored fit and scrap rail. As of February 23, 1983 there was \$701,699 worth of new rail, other track material (OTM) and turnout material on hand. See Appendix II, Exhibit 42. For the purpose of this study, it is assumed that this material would, in general, be used prior to any hypothetical date of cessation of service and that scrap sales would continue so that, at that date, new material would be exhausted and scrap and fit materials on hand would be at approximately the same level as today. This same assumption is made regarding all other new maintenance of way materials now in stock.

In the latter part of 1982, the Alaska Railroad began buying and using a chrome alloy (Chroma) rail in 78-foot lengths to reduce curve wear and rail joint maintenance. At this time, the quantity of this rail, which has all been used to replace worn out curve rail, is relatively small and is, therefore, not singled out as an individual inventory item. Depending upon wear it will either be fit or scrap and fall into its proper category as described above.

### Other Track Material (OTM)

The OTM used with all rail sections is generally in good condition for its present usage. However, most of it is obsolete or of too small a size and weight to be considered reusable by another railroad. Therefore, for the purpose of this inventory, with several exceptions, most of this material is classified as scrap.

Several years ago, The Alaska Railroad changed their standards for both 115 lb. tieplates and splice bars. The new tieplates are 13 inch, double shoulder punched for both rail and hold-down or anchor spikes. These tieplates replace 11 inch double shoulder plates punched only for four rail holding spikes. Thirty-six inch, six hole splice bars replace 24 inch, four hole bars. The track between Portage and Girdwood, 10.3 miles, is equipped with the new bars and plates. Approximately another 2,000 pairs of these bars and 100,000 each of the 13 inch tieplates are scattered over the main line.

Splice bars on this railroad are well maintained including periodic oiling to prevent corrosion. Most of the 24 inch bars and all of the new 36 inch bars are in good condition, but none have any value as reusable. Any railroad buyers of the 115 lb. rail would weld it into long continuous strings eliminating

the need for the conventional splice bars. This railroad does not presently have in place any continuous welded rail except for short strings through grade crossing.

No major railroad would buy and spend the money to install small 11 inch plates including those showing any interest in the 115 lb. rail. However, the 13 inch plate punched for anchor spikes should be marketable and they are, therefore, considered as fit for resale and reuse. There are relatively few of these, numbering about 159,000. The Seattle, Washington, price of this fit material is \$2.80 each<sup>2/</sup> or \$286 per net ton.

Although the other 115 lb. OTM including rail anchors, spikes, bolts and nutlocks is in adequate condition for its present use, none has a resale value for reuse. Rail anchors are not as effective after the first application and not worth a reasonable price plus the costs of distributing and applying. Bolts and nutlocks are not required for the same reason that splice bars have no market as described above. Spikes once driven and then pulled are usually bent making them undesirable for further use. See the Appendix I, Exhibit 6 for additional information on the inventory of other track material (OTM).

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<sup>2/</sup> Mr. Michael Cody, a consultant retained by USRA, furnished all values and prices of fit and scrap track materials in his report to USRA dated September 1, 1983.

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## Turnouts

The Alaska Railroad utilizes three different size turnouts in basically two rail sections. They are No. 7's and No. 9's in the 70 lb. ASCE and 115 lb. RE sections (one No. 7, 75 lb. ASCE) and 115 lb. No. 11's used in the main tracks primarily at passing sidings. Sample on-the-ground inspections revealed the 115 lb. turnout components; switches, frogs, guard rails, etc., to be in good condition although some worn and chipped switch points, a few worn stock rails and slightly worn frogs were noted. The 70 lb. turnouts were, generally, in fair condition with a few found to have well worn switch points, loose braces and other worn components.

It is estimated that 85 percent of the 115 lb. No. 11 turnouts and 80 percent of 115 lb. No. 9's in the main track are fit for reuse, and approximately 75 percent of the 115 lb. No. 9's in use in other than in main tracks are considered reusable. For the purpose of classifying fit turnout material, this report considers only turnout packages.<sup>3/</sup> No tabulation has been made of individual switch points, frogs, guard rails, plates or other turnout components. These turnout packages for 115 lb. rail are presently being purchased new by the railroad.

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<sup>3/</sup> "Turnout packages" include switch points, rods, plates, braces, heel blocks, frogs, frog plates, guard rails and all bolts associated with complete switches, frogs and guard rails if needed. They do not include any rail including the stock rails, regular tieplates, rail splice bars, track bolts, track nutlocks, anchors, switch stands or any switch timber.

Similar to the handling of 70 lb. rail and OTM all reclaimed 70 lb. turnout material is considered scrap and so tabulated in tons. Although approximately 77 No. 7-115 lb. turnout packages are in good condition and fit for reuse, there would be no buyer. Most railroads prefer No. 8 turnouts as a minimum size and use the shorter, sharper turnouts only for special unique situations. The Alaska Railroad is now replacing worn out No. 7's with No. 9's whenever possible and also avoiding the use of No. 7's in new construction. There are a total of 208 No. 9 and 93 No. 11 115 lb. turnout packages considered saleable for reuse. See Appendix I, Exhibit 6.

#### Crossties and Switch Timber

There are approximately 2,092,000 crossties and approximately 690,000 lineal feet of switch timber in track. The ties are soft wood, for the most part hemlock and fir. All ties are creosote treated and those installed in recent years and at the present time measure 7 in. x 9 in. x 8 ft. 6 in. Both ties and switch timber are generally in good condition.

These ties and timber would have little value in the alternative use scenario. It is, therefore, assumed that they would be left in place. There may be opportunities to sell a modest number of these ties and timber on a "where is-as is" basis after track removal, but the net proceeds would be negligible. Other railroads would not spend the money to buy and install used softwood ties.

## Ballast

For many years the ballast used on this railroad was pit run gravel with the grading ranging from sand to river stones as large as a man's head. In recent years the railroad has been crushing this gravel to a maximum size of about two to two and one-half inches. This has made a considerable improvement in track conditions and expedited surfacing and lining with modern track maintenance equipment. Although in many areas, but not all, this ballast is clean and dry, any reuse value would be difficult to estimate and would be less than the cost of salvaging.

## Bridges, Trestles and Culverts

There are 76 undergrade steel bridges of various types, all in good condition. See Appendix II, Bridge Pictures. These bridges are listed by location and type in Appendix II, Exhibit 43. Sample inspections were made of 17 of these structures. Although many have not been painted for some time, there was no evidence of oxidation or corrosion. Abutments and piers appeared to be in good condition with little or no spawling or undercutting. Most of these bridges have open decks. A considerable amount of bridge timber has been renewed in recent years so that the decks, in general, are in good condition. The

only component of these structures with any value is the steel as scrap. However, the cost of dismantling these bridges and loading and transporting the steel to a market would far exceed the sale price.

There are 129 wooden trestles on this railroad as of February 28, 1983; a schedule of these trestles is shown in Appendix II, Exhibit 44. Sample inspections were made of 34 of these structures. All were found to be in good condition. The Chief Engineer stated that all of the other trestles were in a similar condition. All decks, except three with ballast, are of the open type. The bridge timber on the open deck trestles, as on the steel bridges, is in good condition. Two of the ballast deck trestles were inspected and no exception could be taken. The structure condition is good, the ballast clean and dry. The track condition is good including rail, ties, surface and line. All timber including piling, caps, cross bracing, stringers and decking is treated and in good condition. Even though this timber is in good condition, its market value would be far less than the cost of dismantling.

A listing of all culverts by location, type, size and length, dated July 31, 1983, indicates a total of 1,506 scattered over the entire railroad. There are at least twelve different types including open top wooden track boxes, built with logs, built with lumber, corrugated metal pipe, concrete pipe, and multi-plate. Sizes vary from concrete and metal pipe 12 inches in

diameter to twin ten foot diameter multiplate with lengths varying from eight to 216 feet. A summary of this listing can be found in Appendix II, Exhibit 45.

Sample inspections of two multiplate and 12 corrugated metal pipe culverts were made and these facilities were found to be in good condition, open at both ends with adequate length and grade suitable for the physical characteristics of the location. There were 49 open top track boxes installed between 1949 and 1968 of which most were built in 1953 and 1958. The railroad has an ongoing program to replace these boxes with below grade pipe culverts, and by the end of this 1983 fiscal year there will be a significant reduction in their number. There are four culverts in service constructed of logs between 1935 and 1938 which will probably require replacement within the next few years. Also, of importance when considering maintenance and capital expenditures are the 226 culverts constructed with lumber or timber between 1937 and 1967.

### Tunnels

There are eleven tunnels on the railroad ranging in length from 136 feet to two and one-half miles. See Appendix II, Exhibit 46. None of these tunnels is lined. The seven tunnels between Seward and Portage are in relatively poor condition. The portals are poor to fair and the tunnels are seeping with water and have poor drainage causing serious problems. In the winter it is a seven day a week job to control the ice using bulldozers

to keep these tunnels passable for train movement. Two tunnels, one about 3/4 mile and the other one about 2-1/2 miles long, are located between Portage and Whitter. Of the 11 tunnels, these appear to be in the best condition, although they are unlined and do seep some water. Track surface and alignment appeared good and the drainage was adequate. In both cases the portals are well built and in good condition. The other two tunnels located in the vicinity of Healy appeared to be in better condition than the Seward to Portage tunnels insofar as water seepage and drainage is concerned. Track surface and alignment are adequate for the maximum authorized speed.

A wooden snow shed 225 feet long is located just south of tunnel No. 11.35. This shed is of timber construction and is in relatively poor condition. Drainage, water and track conditions within the shed are deplorable. At the time of our inspection, there was one location in this shed where 10 inch shims were in place between the ties and the rails. See Appendix II, Shim Pictures. A large diameter metal pipe is programmed to replace this shed, and also the former 460 foot snow shed north of this tunnel which was removed in the Spring of 1983.

### Buildings

See Appendix II, Exhibit 47 for a list of the buildings now in use by, or on the operating property of, the railroad. Sample inspections of these buildings indicate that most of them are in relatively good condition and well maintained. There are a few buildings requiring exterior refinishing or painting and some roof work. However, there appears to be a surplus of building space. For example, warehouse #4 in Anchorage, formerly leased out, is practically vacant. A truck storage shed was found to be empty and a B. and B. Butler building was loaded with military surplus, electrical and mechanical equipment. Building consolidations could result in savings in maintenance and capital spending.

A \$2,300,000 project is presently underway to change heating methods and conserve energy in the major buildings including shop facilities in Anchorage. This project will result in an improved environment within the buildings and a return on the investment of 10 percent.

In general these buildings compare well with similar railroad structures in the "lower 48."

### Marine Facilities

A description and listing of the major marine facilities is in Appendix II, Exhibit 48. With the exception of rail barge slip #1 and the transit shed at Whittier, these facilities

appear, from a overall general inspection, to be in fair condition. The #1 slip at Whittier is presently out of service due to electrolysis of the steel piling in the foundations under the towers.

### Signals

Except for three dragging equipment detector (DED) signals, the only signals on this railroad are for highway grade crossing protection. However, there are only four sets of these automatic flashing light crossing signals owned and maintained by the railroad. Two sets are over 20 years old and the other two were installed during the past six years. There are a number of other crossing signal sets owned by the State, City of Anchorage or armed services for which the railroad is reimbursed for all maintenance costs.

### Communications

The Alaska Railroad utilizes a modern micro-wave communication system with the exception of two short segments, i.e., the Whittier Subdivision and on the main line between Moose Pass and Portage where communications are handled through open wire and seven miles of underground cable. The original micro-wave system was installed between Portage and Anchorage in 1957 and 1958, and is being rebuilt this year using all new modern solid state components replacing vacuum tube equipment at

a cost of \$200,000. See Appendix II, Exhibit 49 for a more detailed inventory of this communication equipment.

Transmitter-receiver radio equipment is installed in the following types of equipment: locomotives, rail-highway vehicles, track mounted maintenance of way machinery, motor cars, and certain automobiles assigned to the Transportation, M. of W., M. P. & E., Administrative and Security Departments. In addition, there are 120 portable handheld and 30 portable lunch box radios. A list of this equipment is also shown in Appendix II, Exhibit 49. All of these transmitter-receiver sets are in fair to good condition, many of which are relatively new. The entire system operates on FRA assigned frequencies.

The railroad is presently dismantling the open wire pole lines replaced by the micro-wave system. Most of this work should be completed by the end of the next year.

#### Locomotives

The Alaska Railroad's locomotive fleet currently consists of sixty-two (62) diesel-electric locomotives, summarized as follows:

Alaska Railroad Locomotive Fleet

<u>Quantity</u>	<u>Type</u>	<u>Horsepower</u>
13	F-7's	1500
10	GP-7's	1800
3	GP-35's	2500
2	E-8's	2400
2	MRS-1700's	1600
11	RSD-4's	1600
<u>21</u>	GP-40's	3000
62		

Source: The Alaska Railroad

Eight (8) of these locomotives are currently out-of-service due to various major repair needs.

The F-7's, GP-7's, GP-35's and RSD-4's are generally in poor condition, needing substantial rehabilitation and repair of electrical wiring, rotating equipment and engines.

Sixteen (16) of the GP-40's are in fair to good condition, needing some engine work and basic truck overhaul. Five (5) of the GP-40's, the GP-40-2's, received by The Alaska Railroad in May, 1983, are in very good condition.

The maintenance history of the E-8's and MRS-1700's is unknown.

The Alaska Railroad will take delivery of four (4) new GP-49 diesel-electric locomotives in October, 1983.

The locomotive fleet is detailed in the Appendix I, Exhibit 7, by number, manufacturer, class/type, date built/rebuilt, date received by the Alaska Railroad, original owner, current condition and comments. The information contained in this Exhibit was compiled from railroad data, interviews with the railroad's equipment managers, and by actual inspection of available units.

The locomotive fleet, though able to handle the traffic, will require substantial planned maintenance and rehabilitation to maintain current and meet increased traffic requirements. Tradeoffs of cost to repair and rehabilitate many of the Railroad's locomotives will likely result in "buy new" decisions. The following provides some detail on locomotive condition and required repair/overhaul and rehabilitation:

The 1500 Series, F-7 locomotives which were built between 1949 and 1953, were purchased new from General Motors Corporation, Electro-Motive Division. Miscellaneous upgrading has been done on these units over the years. The general condition of these locomotives is poor as they are in need of rewiring, truck overhaul, electrical rotating equipment rehabilitation and engine rebuild.

The GP-7, yard and freight service locomotives, were built in 1951 and acquired from the Army in 1960. These locomotives were rebuilt in 1975, 1976 and 1977, and are currently in need of truck, intermediate engine, and electrical rotating equipment overhaul.

The 2500 series, GP-35 locomotives, were purchased new from General Motors, EMD Division, in 1963 and 1964 and have had no major repairs since new. They are currently in need of intermediate engine, truck and electrical rotating equipment overhaul.

The E-8 passenger service locomotives were purchased from AMTRAK in 1981, and they are currently being upgraded for operation on the Alaska Railroad.

The MRS-1700 work train service locomotives were built in 1952 and acquired from the Navy in 1977. The maintenance history of these locomotives is unknown.

The RSD-4 series, yard switcher locomotives which were built in 1953 by General Electric/ALCO and acquired from the Army in 1974 and 1975, have not had major repair work done on them since they were new. Five (5) of these units are currently stored with bad order engines and the remaining units are in poor condition requiring considerable repair/rehabilitation.

The GP-40 freight service locomotives were bought new from General Motors in 1964, 1975, 1976 and 1978 and are generally in fair condition. Five (5) of these will need intermediate engine overhaul and all units will require truck overhaul in the near future.

The GP-40-2, freight service locomotives purchased from Chrome Crankshaft (out of a Conrail lease), are in very good condition.

Photographs of some typical Alaska Railroad owned locomotives are included in Appendix II.

### Passenger Equipment

The Alaska Railroad passenger fleet currently consists of 52 cars, 46 of which are owned by the Railroad and six of which are leased from AMTRAK.

The Railroad owned passenger equipment is generally in fair condition with the exception of the recently rehabilitated all-electric cars which are in like new condition. The all-electric cars include six chair cars, one lunch counter/cafe lounge, one dome car and two baggage cars. The average age of the passenger car fleet is 29 years.

The passenger car fleet is detailed in Appendix I, Exhibit 8, by manufacturer, class/type, date built/remanufactured, date received by the Railroad, original owner, current condition, and comments/repairs needed. The information detailed in this Exhibit was obtained from The Alaska Railroad data, the railroad's equipment managers and by visual inspection of available equipment.

Photographs of typical Railroad owned passenger cars are included in Appendix II.

Freight Cars

The Alaska Railroad currently owns 1,642 freight cars of the following types:

<u>Quantity</u>	<u>Type</u>
386	Gondolas
320	Hoppers
315	Flats
131	Boxes
123	Tanks
106	Ballast
76	Air Dump
56	Insulated Box
27	Hy-Cube Box
23	URB Flats
21	Bulkhead Flats
19	Covered Hoppers
15	Reefers
14	Shuttle Flats
<u>10</u>	TOFC Flats
1,642	

Source: The Alaska Railroad

Of the 1,642 freight cars owned by the Alaska Railroad, 197 cars are presently prohibited in interchange due to age. By the end of 1983, a total of 752 cars will be prohibited in interchange due to being over forty years old.

Thirty-six hopper cars and 51 tank cars are operating in restricted service, exclusively on the Alaska Railroad, until December 31, 1983 under a waiver granted by the Federal Railroad Administration.

There are 114 cars in service that are over 50 years old, 87 operating under FRA waiver and 27 in maintenance of way service.

The average age of The Alaska Railroad owned freight car fleet is approximately 31 years.

The freight car fleet is detailed in Appendix I, Exhibit 9, by type, date built/age, capacity, quantity, current condition and comments/repairs needed. This information was obtained from The Alaska Railroad supplied status reports, interviews with the railroad's equipment managers and by on-site inspections of available equipment.

Photographs of typical Railroad owned freight cars are included in Appendix II.

#### Highway Vehicles-Owned and Leased

The Alaska Railroad owns a fleet of 33 highway vehicles, 24 of which are equipped with hy-rail gear, and leases 106 highway vehicles from the General Services Administration. A complete listing of the leased vehicles, including lease rates, is detailed in Appendix II, Exhibit 51. The highway vehicle fleet is generally in good condition.

A schedule of Railroad owned highway vehicles, including vehicle condition, is contained in Appendix I, Exhibit 10.

A photograph of a typical by-rail equipped highway vehicle is included in Appendix II.

#### Snow Plows, Cranes and Miscellaneous Equipment

The Alaska Railroad currently maintains 45 pieces of miscellaneous equipment including three snow plows, 11 locomotive cranes and ditchers, three spreaders, 27 cabooses and a business car.

The snow plows, cranes and miscellaneous equipment condition is described in Appendix I, Exhibit 11.

The three snow plows are in fair condition, six of the locomotive cranes/ditchers are in good condition and five are in poor condition. One of the spreaders is in poor condition and two are in good condition.

The general condition of the caboose fleet is good as they have been recently refurbished.

The Alaska Railroad business car, "Denali", was recently rebuilt and is in good condition.

Photographs of representative spreaders, locomotive cranes, cabooses and the business car are included in Appendix II.

### Maintenance of Way Equipment

The maintenance of way equipment is summarized in Exhibit 12 of Appendix I by type, quantity, current condition and comments and is detailed in Appendix II, Exhibit 50. This information was supplied by The Alaska Railroad and was supplemented and updated by the railroad's equipment managers and by actual inspection of available equipment.

The general assessment of the maintenance of way equipment is fair to good and it is well maintained.

Typical photographs of snow removal equipment and maintenance of way cranes are included in Appendix II.

### Shop Equipment

The Alaska Railroad shop equipment is detailed in Appendix I, Exhibit 13, by equipment description, quantity, capacity, location and condition.

The shop equipment, with the exception of overhead cranes and some speciality items such as drop tables, is generally in fair to good condition.

The listing of equipment and its general condition was provided by The Alaska Railroad and has been supplemented by discussions with the railroad's equipment managers.

Photographs of typical shop equipment are included in Appendix II.

## CONTINUING OPERATION EVALUATION

### Fixed Facilities Assessment

The condition of track components, bridges, tunnels, buildings, marine facilities, signals and communication equipment has been briefly described, but it is appropriate to elaborate on track conditions.

Samples of all types of track, main line, branch line, sidings, yard, shop, storage and industrial were inspected by highway-rail vehicle and/or on foot. A walking inspection was made of the full length of the Anchorage yard with spot inspections of most of the tracks and all ladder tracks. Spot walking inspections usually consisted of a minimum of 20 rail lengths. In addition, an overall inspection was made of the main line in both directions between Anchorage and Fairbanks from a special train.

These inspections indicated the rail to be in relatively good condition for the use intended, i.e., main track, siding, yard, etc. Traffic on the sharper curves on the main line is causing considerable head wear. However, worn rail is turned<sup>4/</sup> or renewed well before the occurrence of any problems. In fact, curve worn rail is turned or renewed well before it is worn to the extent

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<sup>4/</sup> Turning means reversing a rail in the same location so that the gauge or inside becomes the field or outside, and the unworn field side becomes the gauge side.

that eastern United States heavy tonnage railroads would take similar action. When it is decided to relay this rail, it is renewed with a chrome alloy (Chroma) rail in 78 foot lengths.

On siding and yard tracks the light 70 lb. ASCE rail is generally in fair condition. Because no rail anchors are used on this rail, it is running (moving longitudinally) and, in certain instances, skewing ties at joints. A few poor conditions were noted on the auxiliary tracks at Birchwood and in Anchorage yard, involving defective and skewed ties together with poor surface and line. But, generally, surface is fair with some bent joints in certain locations, and for the most part this is not a problem. This rail, undoubtedly, would not hold up under heavy tonnage conditions. It is being replaced with second hand (S.H.) or fit 115 lb. rail as it becomes available from main line renewals.

The 90 lb. rail is in two sections, ASCE and RA of which there is a total of 17.8 track miles. Approximately 37 percent of this track was laid without tieplates. Stretches laid with tieplates and rail anchors, i.e., the Fairbanks Airport Spur, are in good line and surface. The 75 lb. ASCE rail laid only on the Eielson Branch is in fair condition. Light rail, 65 and 70 lb., is laid on the tracks in the out-of-service Valdez facility and not a factor.

For the past six years they have averaged about 20,200. See Appendix I, Exhibit 15. For this year, 40,000 were originally programed, but this number has been reduced to a projected 25,000. At present, 50,000 are programmed for 1984. Sample spot track inspections seem to indicate that a level of tie renewals somewhat more than presently projected for 1983, but less than programmed for 1984 should be adequate for the next five years. Beyond that, renewals will probably have to be increased significantly.

The Alaska Railroad has been pursuing an ambitious reballasting and surfacing program with excellent results. With the exception of certain locations, the greater portion of this railroad, including branch lines, sidings and yards, is well surfaced and lined on clean dry ballast. The crushed gravel now in use is a vast improvement over the pit run gravel. During the past two years, an average of about 77,000 cubic yards of ballast were dumped and 180 miles of track surfaced. This means that about 55 percent of the actual total mileage on the railroad was surfaced in this two year period.

Because of many factors peculiar to the Alaskan climate and the primitive methods of sub-grade construction (by today's standards) used on the original lines, there are significant miles of track that must be surfaced every year after the surface frost is gone to remove shims and long stretches of slow orders. It appears that the level of this type of work performed during the past two years is adequate. However, an increase in

The railroad projects the renewal of 31,200 feet of rail in 1983 and is presently programming 52,800 feet for 1984. Considering present and projected traffic volumes together with the present relatively good rail conditions, the Railroad's 1983 and 1984 levels appear adequate. However, in future years, new rail quantities should increase to account for increased curve wear and the need to use some main line rail to replace worn light rail in yards and sidings.<sup>5/</sup>

Even though the crossties are softwood with many of them now in track approaching or over 30 years, they are in very good condition. A few inspections revealed as few as one defective tie per 20 rail lengths (780 feet). There was no instance found where the ties did not meet the FRA Class 3 track standards on the main line or Class 2 on sidings and in yards with the few exceptions at Birchwood and Anchorage yard. Some replaced ties were inspected of which many did not appear defective as defined in the FRA Track Safety Standards. It is apparent that the tie renewals during the past five years have been adequate to properly maintain this railroad.

The railroad estimates average tie life at 37 years so that normal tie renewals should average approximately 56,000 annually.

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<sup>5/</sup> The Railroad developed a "Normal Capital Program" (see Appendix 1, Exhibit 14) covering all desired projects if cash flow and traffic warranted. That program would provide for 20 miles of new rail per year. However, future needs may not necessarily increase to the levels projected in that "Normal Capital Program".

ballast is programmed for this year and next, with a moderate increase in miles of surfacing. Regardless of depth, all ballast is charged to capital. The following table provides a comparison.

Actual and Projected Ballast and Surfacing  
1981 Through 1984

	Actual Average 1981 & 1982	1983	Inc. vs 81 & 82		1984	Inc. vs 81 & 82	
			Actual	%		Actual	%
Ballast-Cu. Yds.	77,000	120,000	43,000	56	160,000	83,000	108
Surfacing-Trk. Mi.	180	200	20	11	200	20	11

Source: The Alaska Railroad

There are many other conditions causing problems with expensive solutions. Maintaining banks to hold the subgrade along the Turnagain Arm against the tides and along rivers against the current requires continual dumping of rip-rap or armor rock. In 1981, approximately 3,800 cubic yards of this material was placed followed by 2,000 in 1982. This work continues this year and must continue in future years to keep the line in service.

Since frost heaves during the severe winters are a major problem, continual shimming is required to keep operating even under slow order conditions. Special track fastenings to permit shims up to 10 inches thick were found in the snow shed at mile post 11.3, and at mile post 151.3, concrete ties have been

installed with threaded fastenings permitting the use of "slotted" steel shims up to six inches thick. See Appendix II, Shim Pictures. At this location both sides of a short stable stretch heave every winter requiring the shimming of the rails across the stable or "low spot." Then, as the frost thaws the track must be closely watched in order to remove these shims at the right time to avoid unsafe surface or cross level conditions. After the shims are removed surfacing and lining is usually required to restore the track to a normal speed operation. These are just two examples of an expensive frost and shimming problem on this railroad. There are 27 buildings each containing 96 sq. ft. of which the only purpose is to store shims, and they are referred to as shim sheds.

Some stretches of the main line are adjacent to hills on which there are mud slides. This mud pushes up against the track and in instances over it. See Appendix II, Slide Pictures. Drainage ditches are blocked and in some cases the track is moved from its alignment. All this results in considerable expense to move this mud out either to the opposite side of the track or to another location via dump cars. At some locations, the railroad has actually driven rail piling at the toe of the slope of the hill or mountain to reduce the pressure of these slides against the track in an attempt to preserve the alignment.

The timetable lists 35 slide areas covering a total 39.65 miles. Of these, 23 are for snow, 11 for mud and dirt and 25 for rock. (This totals more than 35 because in some slide areas more than one type of material is involved.) All types of slides can, and some do, cause disruption to train operations and considerable cost to remove the material and restore the track to service.

Conditions on the line between Seward and Portage, specifically between mile posts 40 and 54, result in severe operating problems and high maintenance expense. This stretch of track winds its way through and over the mountains around curve after curve of up to 14 degrees and up and down steep grades, including the ruling grades, southbound, 3.0 percent and northbound, 2.0 percent. Six of the poorest unlined rock tunnels with continual seeping and dripping water with poor drainage further compound the problem. In the winter large icicles as big as stalactites form and ice fills the track to over the rail. All of this must be continually removed to keep trains operating.

Between the tunnels there are rock cliffs on one side with attendant winter snow slides and falling rock at any time, with 5.7 miles of this stretch designated as "Slide Area." A steel deck truss bridge is located immediately south of the south portal of the first tunnel, another steel bridge between the first and second, and a third between the fourth and fifth tunnel. During the winter it is a seven day per week job, using

heavy equipment, to keep the track through this area open for rail traffic.

Another critical stretch of track is located in the Healy Canyon between mile posts 348.5 and 357. In this area the railroad is built on the side of the mountain along the west side of the twisting Nenana River. This stretch of track is practically all curves up to 10 degrees. The mountain rises sharply along the west side of the track, and the sub-grade on the east side drops steeply to the river over 100 feet below. Although there are rock slides on the mountain, the biggest problem is the slipping or subsidence of the sub-grade into the river. Piling has been driven along the east side of the track in many areas in an effort to stabilize the track. See Appendix II, Healy Canyon Pictures. As a result of subsidence and continual changes in alignment, no record of the degree of some curves in this area is recorded on the track chart.

Maintaining a railroad under these conditions is a most expensive undertaking. Ballast and fill materials must be repeatedly dumped, and the track surfaced and lined even for a 20 mile per hour maximum speed for passenger trains and 15 for freight. But even more critical is the fact that under the right conditions with a large volume of water draining off the mountain into the sub-grade, a slip might occur sending a stretch of the track structure down into the Nenana River. Railroad personnel are continually on the alert for such an occurrence and are, of

course, protecting the movement of all trains. If the railroad is to continue to increase its traffic and train movements and operate a reliable service, reconstruction or relocation of the track structure through this area appears to be a necessity.

Severe Alaskan winters bring heavy accumulations of snow and ice over the entire railroad resulting in abnormally high costs, considering winter traffic volumes, for removal to keep the railroad operating. The following table shows these costs for the past five years as reported by the railroad.

Costs - Snow and Ice Removal\*  
FY 1978 to FY 1983

1983	\$936,789	(to May)
1982	941,130	
1981	703,140	
1980	657,925	
1979	660,919	

\* The costs for 1981 through 1983 were furnished by the Engineering Department. Those for 1979 and 1980 are from the Financial Statements, Maintenance of Way Operating Expense, captioned "Removing Snow, Ice and Sand and Car Cleaning." (Maintenance of Way performs no car cleaning.)

Equipment Assessment

The general condition of locomotives, passenger cars, freight cars, highway vehicles, snow plows, cranes and miscellaneous equipment, maintenance of way and shop equipment has been described in the Inventory and Condition Assessment section of this report. However, for purposes of the continued operations

analysis, the condition assessment is looked at from the point of view of the service life and maintainability of the equipment to provide the required service.

To establish the maintainability of equipment, we inspected the Railroad's shops and shop facilities and had discussions with The Alaska Railroad personnel responsible for equipment maintenance.

These inspections and interviews indicated that the rolling stock has generally been maintained on an "as needed repair" basis rather than on a programmed rehabilitation/overhaul basis. However, the railroad is now establishing certain programmed maintenance, such as F-7, GP-7 and GP-40 locomotive rehabilitation and shop overhead crane overhaul.

The passenger car fleet is in fair condition and maintained to meet service requirements. Major overhaul/rehabilitation of passenger equipment has not been done on the Railroad. The all-electric passenger train overhaul/conversion was contracted to General Electric's overhaul/rehabilitation facility in Hornell, New York.

The highway vehicle fleet, including the vehicles equipped with hy-rail gear, is in good condition. However, should the ownership of The Alaska Railroad be transferred from the Federal Government, the leased vehicle fleet may no longer be available from the General Services Administration. If this fleet were no

longer available to the railroad, these vehicles could be leased from other sources at similar costs. For the detailed listing of these leased vehicles, see Appendix II, Exhibit 51.

The freight car fleet has been maintained as necessary without particular consideration for preventive/programmed maintenance.

The large number of cars prohibited in interchange, a total of 752 cars by the end of 1983, and the average age of the fleet, approximately 31 years, point out the need for The Alaska Railroad to invest in new freight cars to meet current traffic needs and future projections, even though freight car requirements for the projected export coal market will be met by the shipper.

The snow plows, cranes and miscellaneous equipment are in fair to good condition. Some overhaul work will be required on the locomotive cranes and ditchers to support increased traffic projections. The caboose fleet has recently been overhauled and is in good shape.

The heavy equipment shop, which maintains most of the Maintenance of Way equipment, is large enough and well equipped to handle the maintenance and repair of the railroad's maintenance of way equipment. Planned maintenance programs such as engine and crawler track replacements are in place and effective. Major rehabilitation/remanufacturing plans such as

repowering forklifts and graders are also in place. The number one problem of the heavy equipment shop is obtaining parts.

The shop overhead cranes are in need of general repair, primarily because they are "worn out," and crane rails need to be aligned.

The drop pit is in very bad shape, needing general repairs, and a new truck assembly.

The locomotive machine shop equipment, consisting primarily of military surplus, is generally in fair condition. The boilermaker shop equipment is about 50 percent good and 50 percent poor. The blacksmith shop is an antique, and the carpenter shop is good. The wheel shop machines are generally in fair to good shape, with a good boring mill, which is currently out of service awaiting parts from Germany. The equipment in the tin shop is old, but in fairly good condition.

The railroad has just begun a planned shop equipment maintenance program (previously equipment was maintained only if it needed immediate repair), beginning with a budget allotment for the rehabilitation of overhead cranes and the drop pit.

The heavy maintenance and running repair facilities are currently adequate, but crowded.

The diesel repair shop is overcrowded and consideration is being given to extension of the facility to provide space for two additional locomotives.

In general, expenditures for maintenance over the past five (5) years have been adequate to provide the required service. However, to maintain the same level of service, and particularly to meet the demands of the projected increases in traffic, increases in capital expenses for new purchases, programmed maintenance, and increased facility space will be needed.

For each of the major categories of freight traffic, the following table displays an index of how the traffic in each category actually changed between 1978 and 1982 and how the railroad projects traffic to change in the next five years.

Freight Traffic - 1978-87

(Revenue tons)

<u>Fiscal Year</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>PU=1</u> <u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
Sand, Gravel & Mud	.26	.23	.14	.65	1	1.37	1.37	1.37	1.37	1.37
Coal	.91	.80	.90	1.00	1	.97	.96	1.63	1.82	1.94
Petroleum Prods.	.85	.63	.57	.86	1	1.31	1.34	1.31	1.34	1.41
Mfgs. & Misc.	.68	.62	.65	.60	1	.81	.87	.99	.79	.83
TOFC/COFC	.81	.72	.75	.92	1	.88	.97	1.05	1.02	1.07
Forestry Prods.	.88	.72	1.41	1.31	1	1.44	1.63	1.93	1.93	2.00
Other	1.21	1.04	1.46	1.06	1	.69	.73	.77	.82	.75

Source: The Alaska Railroad

From these projections, the freight traffic will increase by 37 percent in Sand, Gravel and Mud, 94 percent in Coal, 41 percent in Petroleum Products, and 100 percent in Forestry Products by 1987, while TOFC/COFC, Manufacturers and Miscellaneous will remain fairly constant, and Others will decrease by 24 percent over the 1982 level. The 94 percent increase in coal traffic is The Alaska Railroad's projection of export coal. Locomotives for line haul and freight cars will be provided by the shipper. However, The Alaska Railroad will maintain the locomotives and provide helper locomotives as required.

These increases could probably be met with the current freight car fleet, except hopper cars for the increased coal traffic, if the current fleet were in good condition and available. However, the large number of cars that will be unavailable to the Alaska Railroad by the end of 1983 due to age (prohibited in interchange) will require substantial investment in freight cars over the next five (5) years.

The railroad passenger traffic is projected to increase between 1983 and 1987. This traffic increase will overburden the old and obsolete steam powered portion of the passenger car fleet.

The locomotive fleet, though able to handle the traffic, will require substantial planned maintenance and rehabilitation to maintain current and meet increased traffic requirements. Trade-offs of cost to repair and rehabilitate many of the Railroad's locomotives will likely result in "buy new" decisions.

#### Operating Expenses-Fixed Facilities

This investigation and study concludes that operating expenditures for Engineering, which includes maintenance of way and communications, should be modestly increased during the next ten years if the railroad is to be maintained at its present levels for present and projected traffic volumes. As a result of a change in certain accounting procedures effective this year, some types of roadway work formerly handled as a capital cost are now charged to operating expenses. It appears that the impact of this change may be somewhat greater than presently forecasted.

Furthermore, in ten years, the rail now in the main track will have been in service for over 40 years, with the lighter rail in the branch lines, auxiliary tracks and yards much older in service years, some rolled in 1915. Obviously annual rail renewals should be increased above present levels during the next ten years, but not necessarily to the 20 miles as contained in the previously mentioned "Normal Capital Program." The renewal of crossties as compared with past years must also be increased in future years particularly in the latter half of the next decade when most of the ties now in track will be between 35 and over 40 years old.

The following table compares actual engineering operating expenditures for the past five years with the Railroad's projections for this year and the next six.

**Engineering Operating Expenses**  
(Excluding Depreciation)

<u>Year</u>	<u>\$000</u>	<u>Notes</u>
1978	5,065	Actual*
1979	4,068	
1980	3,946	
1981	5,419	
1982	7,417	
1983	9,800	Projected 9/1/83
1984	9,340	
1985	9,770	Program in 1983 Dollars
1986	9,830	
1987	9,890	
1988	9,950	
1989	10,010	

\* Due to the previously discussed accounting change, these years are not directly comparable with 1983 and beyond.

Source: The Alaska Railroad

Except for its projected rail and crosstie renewals, we determined that other costs making up the Railroad's projected engineering operating expenses appear reasonable. Using 1983 as a base year, we modified the Railroad's tie and rail projections to arrive at what we consider would be an adequate program to support the railroad's traffic projections over the next ten years. We determined that an increase in the railroad's tie and

rail projections was appropriate (See Appendix I, Exhibit 16). We also considered that the railroad should be able to achieve a two percent productivity improvement commencing in fiscal year 1984.

A comparison of our modified projected expenses with the railroad's projections appears in the following table.

Projected Engineering Operating Expenses

(Excluding Depreciation)  
Thousands of 1983 Dollars

<u>Year</u>	<u>ARR</u>	<u>Modified</u>	<u>Difference</u>
1983	9,800	---	---
1984	9,340	10,560	1,220
1985	9,770	10,580	810
1986	9,830	10,680	850
1987	9,890	10,760	870
1988	9,950	10,960	1,010
1989	10,010	11,060	1,050
1990	10,010	11,160	1,150
1991	10,010	11,120	1,110
1992	10,010	11,280	1,270
1993	10,010	11,450	1,440
Totals (excluding 1983)	98,830	109,610	10,780

The railroad prepared a report in January 1983 entitled "Deferred Maintenance" showing a total of \$88,200,000. See Appendix I, Exhibit 17. Seven of the 13 items on this list relate to capital and perhaps should be considered as "Deferred Capital Spending." The other items are in the maintenance

category. The tie and rail numbers in that analysis are based on a theoretical life rather than actual present condition. Our modified projections for ties and rail for the next ten years appear quite adequate. On the ground inspections did not reveal any conditions of deferred maintenance in connection with the three items: yards, turnout renewal or rail joints. However, it did appear that there may be an excessive number of chipped rail heads (surface) at the joints which could be considered deferred maintenance. The railroad's report provides \$600,000 for rail end welding which appears reasonable. The railroad has accelerated this activity this year and anticipates a continuation in coming years within projected operating expenses.

The Engineering department leases 38 pieces of automotive equipment from the General Services Administration. This equipment includes automobiles and trucks from pick-ups to diesel tractors. The monthly lease rate varies from \$127 to \$372 and totals \$6,172. The State, the Department of Transportation, and the General Services Administration have not yet resolved whether these vehicles will be transferred. However, the impact of losing this equipment on engineering operating expenses would be insignificant. Similar equipment can be leased at comparable prices from other sources or purchased as a part of the capital program resulting in a slight reduction in these expenses.

### Operating Expenses-Equipment

This investigation and study indicates that the railroad's projected expenditure for motive power and equipment is sufficient for current and projected operations.

The Alaska Railroad is projecting passenger service annual mileage to remain constant at approximately 1,750,000 miles through 1989, freight service annual mileage to increase by approximately 38 percent by 1989 and locomotive mileage to increase by approximately 57 percent by 1989. These locomotive and freight train projected mileage increases are primarily the result of the anticipated export coal market.

Currently The Alaska Railroad is operating a fleet of locomotives and freight cars that are generally in fair to poor condition resulting in high maintenance cost per mile. The following table delineates the locomotive, passenger car and freight, private and leased equipment maintenance cost per mile for fiscal years 1981 and 1982, the forecasted cost for 1983 and the projected cost for 1984 through 1993.

### Maintenance Cost/Mile

<u>Fiscal Year</u>	<u>Locomotives</u>	<u>Passenger Equipment</u>	<u>Freight, Private &amp; Leased Equipment</u>
1981	\$1.73	\$0.26	\$0.27
1982	1.23	0.24	0.23
1983	1.36	0.25	0.23
1984	1.35	0.24	0.21
1985*	1.15	0.24	0.17
1986	1.12	0.23	0.16
1987	1.16	0.23	0.16
1988	1.09	0.22	0.16
1993	0.95	0.22	0.14

\* Start of substantial export coal traffic as projected by The Alaska Railroad.

Source: The Alaska Railroad

The Alaska Railroad locomotive fleet currently contains 13 F-7 locomotives and 11 RSD-4 locomotives with average annual maintenance of costs of \$1.76 per locomotive mile. In October, 1983, the Railroad will take delivery of four new GP-49 locomotives with average annual maintenance cost of \$0.55 per locomotive mile. Upon receipt of 12 additional GP-49 locomotives in 1984, 1985 and 1986, the Railroad plans to scrap the 11 RSD-4's and eight of the F-7 locomotives, thereby reducing the locomotive fleet maintenance cost per mile.

The Alaska Railroad passenger car fleet currently contains ten recently rehabilitated and upgraded all-electric passenger cars and the Railroad plans to have ten additional cars

rehabilitated and converted to all electric by 1986, thus reducing the passenger car fleet maintenance cost per mile.

The Alaska Railroad's Capital Expenditure Plan calls for the replacement of approximately 15 percent of the freight car fleet by 1986, which should reduce the freight, private and leased equipment maintenance cost per mile.

Although increased track maintenance will be required to meet the needs of projected increased traffic, the purchase of new and more advanced track work machinery should offset increases in maintenance of way equipment maintenance. Engineering equipment estimated cost of repairs for November, 1982 to May, 1983 is detailed in Appendix II, Exhibit 52.

The reduction in maintenance cost per mile of locomotives, passenger and freight cars due to the purchase of new and the rehabilitation/upgrade of older equipment, the purchase of new and more advanced track work machinery, and the projected productivity gain of 2 percent a year after 1984, should permit The Alaska Railroad to operate effectively within the following projected operating expenses for equipment.

Projected Operating Expenses  
Equipment  
Excluding Depreciation  
Thousands of 1983 Dollars

<u>Fiscal Year</u>	<u>Expenses</u>
1983	\$ 9,440
1984	9,380
1985	10,710
1986	10,920
1987	11,110
1988	11,300
1989	11,500
1990	11,500
1991	11,500
1992	11,500
1993	11,500
Totals (excluding 1983)	\$110,920

Source: The Alaska Railroad

Capital Expenditures

The railroad provided USRA with a capital plan averaging \$14 million annually for fiscal years 1983 and 1987 funded by the railroad's projected cash flow. See Appendix I, Exhibit 18. That plan did not include much of the work which will be required incident to the transfer of ownership to comply with OSHA and state and local codes. Conversely, that plan included at least one questionable item in our opinion; namely, installing double track between M.P. 105 and M.P. 114.

The railroad also provided a master listing of potential capital projects which might be considered depending on future earnings and traffic levels. These projects total \$723 million. See Appendix I, Exhibit 19. Obviously, a prudent investor would not undertake any of these projects unless he could be assured of a reasonable return on investment, or unless they were absolutely required to continue operating the railroad. However, the listing was useful in defining the possible range of requirements which might be considered in the future depending on traffic, earnings, or external factors.

Discussions with the railroad management indicate a consensus that \$12 million per year for the next ten (10) years would adequately cover capital requirements based on present traffic projections. This amount would provide, generally, for the following:

<u>Item</u>	<u>Millions-1983 Dollars</u>
Purchase Locomotives	1.50*
Purchase Freight and Passenger Cars	2.90*
Purchase Shop Equipment	0.30*
Modify and Upgrade Motive Power	0.50*
Modify and Upgrade Passenger Cars	0.50*
Purchase M/W Equipment	0.75*
Energy Conversions	1.00*
Ballast and Riprap	0.75
Building Improvements	0.70*
Bridges and Tunnels	0.75
Line Changes	0.60*
Communications and Signals	0.50
Drainage Improvements	0.25
Contingencies	<u>1.00</u>
 Total	 12.00

\* These projected capital expenditures are based on an average of the total amount projected for the ten year period, not the amount projected for each year of the ten year period.

This program will generally permit the railroad to handle its forecasted traffic; however, it will not significantly increase the railroad's utility. Further, this program provides some but not all funding to correct OSHA violations and state code deficiencies.

The revised OSHA report, prepared by the railroad, shown in Appendix II, Exhibit 53, lists 78 deficiencies at a total estimated cost to correct of \$5,991,000. However, after an analysis of this list and present work programs, it was found that \$3,850,000 has already been committed with work that is in progress or is in the 1984 capital program. This leaves an

estimated total of \$2,141,000 to complete the necessary improvements. After providing for a contingency of \$350,000, we determined that this work could be completed in five years at an additional capital expenditure of \$500,000 per year.

The State of Alaska retained a consortium of consultants to study state codes, OSHA, and other building deficiencies on The Alaska Railroad. Two independent and separate estimates were made to correct the conditions found. These estimates both totaled between 85 and 90 million dollars. The results of these studies were made available about September 1, 1983.

A complete review was made of the three volumes which provides a description of each violation or deficiency and an estimated cost to correct. Our study developed the following:

1. Although the total cost of the two estimates are approximately the same, estimates for individual items and buildings vary widely, in some instances as much as 1,000 percent.
2. These listings almost completely overlap the OSHA list previously discussed.
3. The overheads as they are applied actually total 109 percent. This appears too high, and our investigation indicates that 80 percent would be a reasonable total overhead for the State of Alaska. This is for work

performed by outside contractors with no consideration given to performing any of the work by railroad forces. Quite likely, much of this work would be done by railroad forces, particularly in the outlying areas, with significantly lower overheads.

4. All improvements are estimated on an "in kind" basis. In other words, no consideration was apparently given to eliminating any facilities on which it would be expensive to make the required improvements, by building new or by moving present occupants to another facility. In one case approximately \$1,000,000 is estimated to improve a building that is practically vacant.
5. Many of the cited deficiencies are not code or OSHA violations, but desirable improvements which would be handled as required in the annual capital programs.
6. No accounting is made of work now in progress or programmed which will rectify some of these violations.

After taking all of the above factors into consideration together with our knowledge of the facilities and discussions with railroad representatives, it appears that about \$15,000,000 in addition to present commitments and the previously projected OSHA expenditures should support the required improvements to meet these code violations. For additional details regarding these calculations, see Appendix I, Exhibit 20.

If this work were to be completed over the next ten year period, another \$1.5 million per year would be added to the capital program as shown in the following table.

Summary of  
Projected Capital Spending  
Millions of 1983 Dollars

<u>Year</u>	<u>ARR</u>	<u>OSHA</u>	<u>Code Violations</u>	<u>Total</u>
1984	12.0	.5	1.5	14.0
1985	12.0	.5	1.5	14.0
1986	12.0	.5	1.5	14.0
1987	12.0	.5	1.5	14.0
1988	12.0	.5	1.5	14.0
1989	12.0	---	1.5	13.5
1990	12.0	---	1.5	13.5
1991	12.0	---	1.5	13.5
1992	12.0	---	1.5	13.5
1993	<u>12.0</u>	<u>---</u>	<u>1.5</u>	<u>13.5</u>
Totals	120.0	2.5	15.0	137.5

# ALASKA

## REVIEW OF SOCIAL AND ECONOMIC CONDITIONS

UNIVERSITY OF ALASKA INSTITUTE OF SOCIAL AND ECONOMIC RESEARCH FEBRUARY 1982 Vol. XIX No. 1

## THE ALASKA RAILROAD: OVERVIEW AND OPERATIONAL ALTERNATIVES

### INTRODUCTION

*This Review takes a look at the federally owned Alaska Railroad in the context of its apparent pending transfer to the State of Alaska. After describing the history of the railroad—its present physical plant, rolling stock, and its operations—we analyze the most important issues with which the state must deal: railroad land, employees, finances, competitive environment, and passenger service. We also review organizational structures that might be applied to the railroad following the end of federal control and make recommendations for further action. (See box on page 3 for a brief summary of study findings.)*

The Alaska Railroad (ARR) is unique in that it is (1) the only railroad in North America that is a federal agency, (2) the farthest north railroad in North America, and (3) considered (by some) as a frontier development tool. It has enjoyed a varied history and has alternately been the recipient of intense criticism and extensive federal grants. Originally conceived as a development project in the grand style of the Panama Canal (from which it received much of its early equipment), it quickly fell into disrepute, emerged as a military implement, was converted from pauper to spoiled child, and then allowed to sink into an anonymity which has plagued it to the present day.

The Alaska Railroad is an operating agency of the United States Department of Transportation, Federal Railroad Administration (FRA). As such it is subject to all the obscure federal policies visited upon such agencies, and its operational motivations are both political and economic. However, it has also become an important overland transport link in Alaska

and a central element in the state's economic development process.

### Changing Federal Policy

During the past decade, FRA has become increasingly interested in transferring ownership of the property to a nonfederal entity. The agency first introduced draft federal legislation to facilitate the transfer in 1971. However, the momentary prosperity of the ARR during the Alyeska pipeline construction project diminished federal interest in disposing of the property.

With the return of "normal" economic conditions in 1978, however, FRA was once again motivated to explore means of relieving itself of the ARR. The economic downturn also coincided with a shift in FRA policy, mainly due to its increasing involvement with Conrail and Amtrak.<sup>1</sup> By 1979, it was apparent that both organizations had become major fiscal and political liabilities for FRA, leading the agency to both a fear of and disinterest in attempts to operate any railroad. Thus, FRA's policy tended toward the dissolution of any rail property which

<sup>1</sup>Federally controlled railroad properties that had been unsuccessfully managed in the private sector.

This article was adapted from a report prepared for the Alaska Department of Transportation and Public Facilities, Division of Planning and Programming, by the Institute of Social and Economic Research and Bivens and Associates, Inc.

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## FEATURE

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The Alaska Railroad: Overview and Operational Alternatives

*During the preparation of this article John T. Gray was an assistant professor of transportation with the Institute of Social and Economic Research in Anchorage; he has since resigned to take the position of Manager of Marketing and Sales with the Alaska Railroad. John A. Sivens is a transportation consultant and president of Sivens and Associates, Inc., of Phoenix, Arizona.*

appeared to be economically marginal, including those controlled by FRA.

This policy, as it pertains to the Alaska Railroad, was first published in AER's 1979 annual report (in mid-1980):

*Since the Government of the State of Alaska has substantial surplus funds because of the growth of oil revenues, the Federal Government believes that ownership of the Alaska Railroad should be with the State Government. The Federal Government believes the Alaska Railroad exists primarily for the benefit of the residents and shippers of Alaska; they need and deserve a much larger voice in determining the role they want the railroad to play.*

This policy received additional emphasis when the Reagan administration took office in January 1981. The transfer of the ARR was consistent with emerging federal orientation in several areas, including (1) replacing a federal function with a local entity, (2) reducing federal employment, and (3) reducing FRA's funding requests.

The policy also supported FRA perceptions that (1) the ARR no longer served the function of a frontier development tool, but had become part of a more mature transportation and economic system, (2)

Alaska could afford to operate and subsidize the railroad if necessary, (3) future prospects suggested that private enterprise might find the railroad an increasingly attractive investment, and (4) the ARR could more effectively support public and private objectives under a revised organizational and institutional structure.

To implement these views, FRA once again prepared draft legislation to authorize transfer of the Alaska Railroad to the state. This legislation was introduced into the U.S. Senate on July 17, 1981.

## History of the Alaska Railroad

The ARR came into existence through an act of Congress on March 12, 1914. This legislation empowered the President to acquire and (or) construct a railroad, not to exceed 1,000 miles in length, to connect Alaska's interior navigable waterways and one or more coal fields with an ice-free harbor on the Gulf of Alaska. The Alaska Engineering Commission, which had previously located several potential routes, was directed by President Wilson to purchase the 71-mile Alaska Northern Railway and to extend its line from Seward to the head of navigation of Cook Inlet

and northward up the Susitna and Chulitna river valleys to a crossing of the Alaska Range near the headwaters of the Nenana River. From that point the railroad was to be built to the confluence of the Nenana and Tanana rivers and upriver to Fairbanks. Two branches were also constructed to tap coal deposits. One branch extended eastward up the Matanuska Valley and the other eastward from the juncture of the Healy and Nenana rivers. This basic system, with minor additions and deletions, has remained intact from its official completion in 1923 to the present (see Figure 1).

#### Deterioration and Rehabilitation

The decline of placer mining in the Tanana Valley prior to the completion of the railroad, the conversion of naval vessels from coal to oil soon after completion, and the general lack of economic activity along the line combined to produce operating deficits during the first decade and a half of ARR's operation. From 1924 to 1945, the railroad received no operating or capital appropriations from Congress. This resulted in a continuing deterioration of an already marginal physical structure. During the years before World War II, the railroad was maintained to only

#### SUMMARY OF ISSUES INVOLVED IN ARR TRANSFER

• **Pending Transfer of the Alaska Railroad.** The Federal Railroad Administration (FRA) is presently taking steps to transfer the Alaska Railroad (ARR) from the federal government to the State of Alaska. The FRA proposes to transfer the ARR to the state without charging a direct acquisition cost. However, FRA's proposed legislation also transfers all ARR's liabilities and obligations, which have not yet been clearly defined.

• **ARR Lands.** Lands required for effective railroad operation extend beyond the ARR's rights of way, yards, terminals, and ports, since the railroad requires not only materials-source lands, but also needs to lease lands to traffic-producing tenants. However, much of ARR's land holdings are presently uncertain, because Native claims have been filed on certain portions of it under the 1971 Alaska Native Claims Settlement Act.

• **Railroad Finances.** A 1980 ICC freight rate study of the ARR concluded that the present rates exceed the variable cost of transportation and fully compensate the carrier. In fact, in the past 3 years, even with poor economic conditions nationally and in Alaska, freight transport on the ARR fully met all out-of-pocket costs and some capital costs.

Passenger service, however, has long required subsidization by the freight traffic, and even this subsidy has not been enough. While an increase in passenger fares seems warranted, fares cannot be raised enough to fully meet the cost of passenger service without driving away passengers. This problem would be somewhat alleviated by separating revenue and cost accounting for passenger and freight service. Management needs to establish an aggressive passenger marketing program, moderately increase passenger fares, and request a public subsidy to cover remaining costs of service.

• **Outlook and Benefits of the ARR.** The ARR's freight service, available from Seward and Whittier all the way through Anchorage to Fairbanks, serves the needs of a majority of Alaskans. It is, and will continue to be, an important element in Alaska's transportation system. Not only is it essential to development of many of Alaska's resources, but by competing with normal carriers, the ARR secures competitive rates for shippers. Without the rail service alternative, costs of moving commodities would be much higher. And some pro-

ducts, such as large bulk shipment of coal, steel, sand and gravel could not be economically moved at all.

• **ARR Employees.** The ARR has for several years been reducing the numbers of its employees, and a hiring freeze has been in effect since January 20, 1981. As of mid-April 1981, the ARR had 679 employees and 785 authorized positions, a vacancy rate of 17 percent. Freight-user service could suffer should present employment levels persist in an expanding market.

As Department of Transportation personnel, the employees of the ARR have all the privileges and rights of other federal agency personnel. In addition, most ARR employees are members of various labor unions. Enjoying such double protection under existing agreements, employees will not likely wish to relinquish any of their existing rights. As a result, transferring these employees to the state could involve several complex problems.

Meeting all employer retirement and fund contributions for ARR employees will cost about \$28 million during the next 20 years (1981 dollars). Or, if we include inflation and salary increases of 10 percent per year (compounded), the cost will total about \$195 million, or an average annual contribution of \$8.7 million. However, ARR now realizes and could expect to continue to realize adequate revenues from freight service to provide funds for this contribution. Freight revenues could also pay for employee sick leave (\$4.3 million) and annual leave (\$1.5 million).

• **Condition of Railroad.** The track, structures, and rights of way of the ARR are generally in good condition and well maintained. For the most part, the lines meet or exceed FRA Class IV standards.

The rolling stock and locomotives are generally well maintained and adequate for the traffic carried. However, much of the locomotive and car fleet is old, being previously well used by the military or other railroads. A fleet modernization program may be needed if traffic increases significantly.

Passenger cars are generally well maintained but are old and in need of substantial modernization.

The ARR is generally capable of servicing its equipment; its mechanical and electrical shops are well equipped and adequately support effective maintenance and modification of locomotives and rolling stock.

minimal branchline standards. This condition was aggravated by the fact that "official" completion in 1923 had still left a great deal of work to be done before the system could be considered technically adequate.

World War II provided ARR with a rush of traffic and much-needed income, as well as the now-important link with a second ice-free port, at Whittier. However, the war also accelerated deterioration of the property. Even with military assistance between 1942 and 1945, the railroad was almost physically exhausted by the end of the war. This

situation demanded a decision on whether to abandon the railroad or rebuild it. The Federal Government decided to rebuild.

This decision resulted in a project that was to last 30 years and become one of the most controversial episodes in the ARR's history. Actual expenditures began in 1946 and over the construction term amounted to almost \$95 million. The actual value of these improvements, however, was considerably greater since much property was transferred at nominal cost from other federal agencies. The rehabilitation included strengthening the roadbed; laying new track; replacing bridges and buildings; buying new locomotives, rolling stock, and maintenance equipment; and building new shops, as well as terminals at Anchorage, Fairbanks, and Seward.

Most of the work, from Whittier to Fairbanks, was completed by 1952; however, the main line to Seward, begun in 1953, was not completed until 1958, and only after a special appropriation was requested by the Defense Department. By the end of the rehabilitation period, the railroad would finally be considered complete and was basically in its present form.

#### The 1964 Earthquake

Total damage to the Alaska Railroad from the 1964 earthquake amounted to approximately \$27 million, of which \$25.4 million was obtained through Congressional appropriations.<sup>2</sup> Of the total, almost \$11.7 million was required to reconstruct the line from Portage to Seward and the Seward Terminal. Records of the controversy over whether or not the Seward reconstruction should be undertaken indicate that it could not be justified on the basis of capital and future operating costs. However, the Alaska Railroad and its owner, the Department of the Interior, presented funding appeals based on a combination of economic and social factors. One letter stated:

The decision on reconstruction is not restricted to economic considerations alone; in many respects humane and equitable factors assume even greater significance. The essential fact is that failure to restore rail service means that Seward will disappear as an important factor in Alaska life.

<sup>2</sup>These appropriations should be clearly distinguished from other federal funds invested in the ARR. The railroad's earthquake rebuilding monies were only a small part of the \$400 million in disaster relief assistance provided to Alaska. The vast majority of this money went to individuals, private companies and local governments through a variety of assistance programs. Thus, for policy purposes, the funding of the ARR reconstruction should be treated in the same light as one would all other economic entities of the state, rather than as a federal agency appropriation.

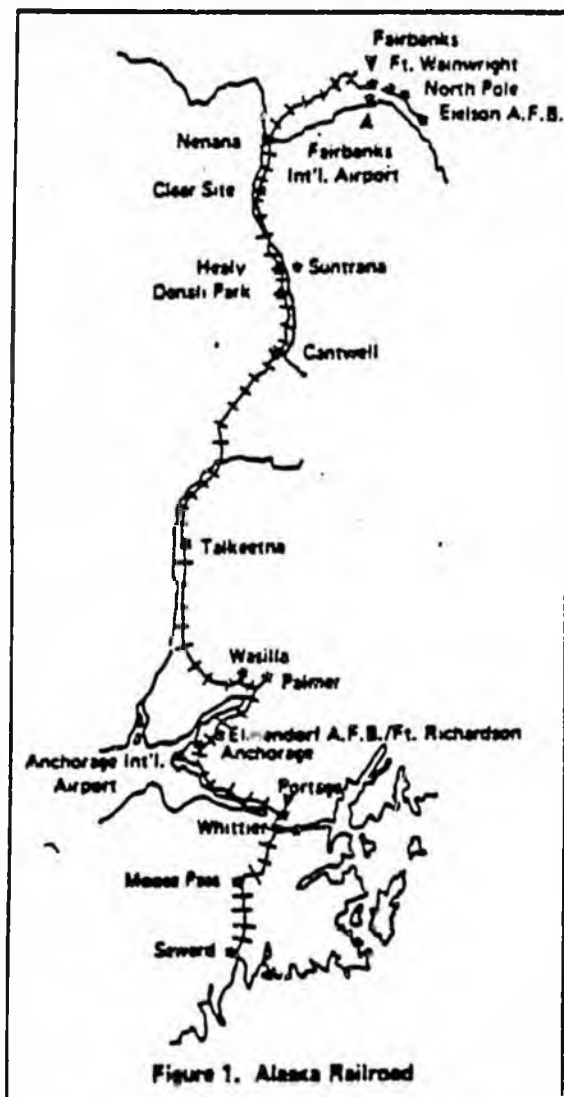


Figure 1. Alaska Railroad

Given the information available at the time, the decision to rebuild to Seward may or may not have been economically sound. The important point is that as a federal agency, the railroad based a major part of its argument to rebuild the line on factors which were not necessarily in its own economic best interest. A private firm, confronted with the same circumstances, would not likely have used the same reasoning nor have made the same decision.

#### Railroad Barges and the Port of Anchorage

Shortly before the earthquake, two other events occurred which, together with the subsequent loss of Seward, caused a long-term change in the character of both the railroad's traffic patterns and those of Alaska's entire railbelt region. These were (1) the initiation of railcar barge services between Alaska and both Canada and the continental United States and (2) the opening of the Port of Anchorage to year-round container ship service. Of the two, the most important was the barge service—not in terms of movement volumes, but rather in the options made available to Alaska shippers. The action of the railroad and its barge connections made it possible for the first time to ship directly from the manufacturer or major distributor, wherever his location, directly to an Alaska location without reloading in Seattle and Alaska ports. The economic independence from Seattle wholesalers offered by this service forced steamship companies, particularly Alaska Steamship and Sea-Land Service, to establish similar options.

#### Construction of the Trans-Alaska Oil Pipeline

The final set of events which shaped the present Alaska Railroad were those surrounding its participation in the construction of the trans-Alaska pipeline. During the years 1974 through 1977, the railroad probably moved the largest, most lucrative volumes of traffic since World War II, and the physical system underwent a similar, although somewhat milder, strain. Once again, the only possible solution, given the federal agency status of the railroad, was to transfer property from other federal organizations (most notably locomotives from the military) and to use Congressional appropriations for capital improvements and major maintenance. Twenty-four million dollars in appropriations, in addition to \$13 million in improvements financed through earnings, permitted the railroad to emerge, for the first time, from a period of heavy usage in better physical condition than it entered.

### THE PHYSICAL PLANT

#### The Main Line and Branches

The Alaska Railroad (ARR) today has a single

track mainline of 419 miles from Whittier to Fairbanks via Anchorage, Wasilla, Healy, and Nenana. In addition, there are six branches with an aggregate total of 115 miles. These include the 28-mile branch from Fairbanks to Eielson, the 10-mile Fairbanks International Airport spur from Ft. Wainwright to the airport, the 4-mile coal branch from Healy to Sun-Grana, the 7-mile line from Matanuska Junction to Palmer, the 3-mile Anchorage International Airport spur, and the 63-mile line from Portage to Seward.<sup>3</sup>

The mainline has only mild gradients along the water level route between Whittier and Anchorage and up the Susitna Valley as far north as Gold Creek (about 150 miles from Anchorage). However, the severe grades on the next 35 miles to the summit of the pass through the Alaska Range reduce the tonnage ratings of locomotives by about 40 percent. The grades on the north side of the range are much easier, being similar to the water level line in the lower Susitna Valley, with the exception of a single short five-mile stretch. The mainline north of the range to Fairbanks and the Eielson branch pass through generally rolling country with mild gradients.

The most severe portion of the railroad is the line from Portage to Seward, which crosses two mountain barriers with steep gradients. Both restrict southbound traffic, reducing the tonnage a locomotive can handle by 75 percent and 65 percent, respectively, when compared with what can be moved between Anchorage and Portage. Northward grades are slightly milder but still are more demanding than any of the line north of Portage.

Passing sidings are spaced about every 7-to-10-miles so that trains may meet and pass. However, sidings long enough to accommodate most freight trains are less frequent. In addition, there are tracks at various points along the line which serve industries not located at a major yard. Table 1 summarizes the physical features of the mainline and principal branches.

#### Track Conditions

The track structure of the Alaska Railroad is currently in excellent condition, particularly considering the relatively light traffic. The main line and the line to Seward are maintained to FRA Class IV quality standards which permit freight trains speeds up to 60 miles per hour and passenger trains to 80 miles per hour, if certain safety conditions are met. In fact, the Alaska Railroad must limit its train speeds

<sup>3</sup>It should be noted that the railroad considers the line to Seward as part of the main line, and it is maintained to these standards. However, it has the lightest traffic of the entire system (about 300,000 gross tons annually).

Table 1  
Summary of Alaska Right-of-Way Characteristics

Line Segment	Distance	Tonnage Rating Northbound <sup>a</sup>	Tonnage Rating Southbound <sup>a</sup>	Passing Sidings over 3000 ft.	Industrial Tracks Between Stations <sup>b</sup>
Seward-Divide	9.1	875	4,000	0	0
Divide-Prudhoe	8.4	1,600	850	0	0
Prudhoe-Hunter	31.8	1,600	4,000	2	3
Hunter-Grandview	4.9	900	4,000	0	0
Grandview-Spencer	10.9	4,000	840	1	2
Spencer-Portage	8.4	4,000	3,000	1	0
Whittier-Portage	12.4	2,600	3,000	1	0
Portage-Potter	36.4	4,000	3,000	1	0
Potter-Anchorage	13.7	2,000	2,500	1	22
Anchorage-Matanuska	36.4	1,850	3,000	3	5
Matanuska-Palmer	6.5	2,000	4,000	0	6
Matanuska-Goldcreek	112.5	1,850	2,500	8	9
Goldcreek-Hurricane	18.2	1,100	2,500	0	0
Hurricane-Monolulu	7.3	1,100	1,325	1	0
Monolulu-Colorado	8.4	1,100	1,800	1	0
Colorado-Summit	15.4	1,800	1,800	1	1
Summit-Healy	45.6	2,700	1,800	1	6
Healy-Nenana	53.6	4,000	1,800	1	7
Nenana-Fairbanks	58.6	3,000	3,000	4	4
Fairbanks-Eielson	28.0	3,000	2,000	0	9
Yards:	Seward Nenana	Healy Anchorage	Whittier Fairbanks		

<sup>a</sup>Tonnage ratings for 3,000 horsepower locomotives.

<sup>b</sup>Additional industrial tracks in yards, at military bases (Ft. Richardson, Elmendorf, Eielson, Ft. Wainwright), and at Anchorage and Fairbanks International Airports.

Source: Alaska Railroad, Timetable No. 109.

for freight and passenger trains to 49 and 59 miles per hour, respectively, since it has no automatic block signal system, one of the FRA safety requirements for higher speeds. In addition, the number of sharp curves places further speed limitations on some sections of the line. These allow the railroad to follow the contour of the land in more mountainous areas so that the relatively mild gradients (which are extremely important to efficient operation) can be maintained.

#### Tracks, Bridges, and Yards

The track and bridges of both the main line and the Seward line are maintained to accommodate cars carrying a load of up to 100 tons, although the Eielson and Suntrans branches have lower loading limits. Present operation plans call for limiting 100-ton capacity cars to 80 tons when they are used to move bulk products, such as coal and gravel. This is due to the excessive track wear caused by trains

composed entirely of 100-ton capacity cars.

The railroad also operates and maintains a number of yards to serve local industries, sort cars, and to maintain its equipment. These vary considerably depending on the purpose for which they are used. The yard at Seward serves the railroad-owned port facilities at that location and includes a number of car marshalling tracks, a small equipment maintenance facility, the dock facilities, and several tracks to local industries. Whittier is designed and used differently; since it is the interchange point for railcar service, the facility is primarily designed to serve the two railroad-owned car-barge slips. Secondly, facilities in Whittier include those for the Whittier-Portage passenger-auto shuttle service and those for the military dock and petroleum terminal.

Anchorage has the railroad's major classification yard, locomotive and car maintenance shops, headquarters, and some car storage facilities. The yards also serve a number of major and minor indus-

tries including the Anchorage Port, Elmendorf Air Force Base, and Fort Richardson. There are also container-on-flatcar and trailer-on-flatcar facilities in Anchorage.

Healy has a small yard and locomotive service facility and exists primarily to serve the nearby coal mines. The Nenana yard exists solely to serve the railroad's small river port in that town and several other local industries. Fairbanks contains a small classification yard, limited locomotive and car shops, and trackage to serve local industrial facilities. The yard is also the base for service to Fort Wainwright and Eielson Air Force Base, as well as the North Pole Refinery.

#### Equipment

The Alaska Railroad uses a variety of equipment to produce revenue and maintain the property. The largest and most costly units are the locomotives—the railroad has sixty-five, with an average age of 18.7 years. The most modern of the units are the fifteen 3,000-horsepower road-switcher locomotives built by General Motors between 1975 and 1978. These are comparable to the most modern equipment on any railroad. Ten older 1,600-horsepower road-switcher locomotives were completely rebuilt in 1977 and have a useful efficient life at least through 1992. Four other 2,500-horsepower road switchers acquired in the mid-sixties are old enough to be eligible for complete rebuilding, and one has already been rebuilt. Of the remaining thirty-six units, most were built between 1951 and 1953, and only about ten to twelve are usually in service under present traffic conditions.

Seven of the older car-body type locomotives are used in passenger and mixed train service between Anchorage and Fairbanks, while several ex-military road switchers are used in Anchorage yard service and as backup yard engines around the system. Several of the car-body types might be usefully rebuilt if passenger service is continued. However, the ex-military units are probably near the end of their useful lives. Several of the older locomotives of both types are being cannibalized to provide parts for the others.

The freight car fleet numbered 1,754 units in 1980, with an average age of 32 years. Table 2 shows the distribution of freight cars by functional type. Clearly, the freight car roster is dominated by the open types, including the flat cars, gondolas, open hoppers, and dump/ballast cars. This is consistent with the types of traffic being handled with most of the tonnage consisting of bulk materials, such as coal, gravel, logs, and pipe along with trailer- and con-

Table 2  
Alaska Railroad Freight Cars

Car Type	Number	Most Recent Year Built	Number Built in Most Recent Year
Box	235	1965	34
Flat	389	1976	100
Gondola	394	1943	395
Hopper, Open	348	1981	25
Hopper, Covered	21	1970	9
Tank	139	1970	3
Refrigerator	16	1966	11
Dump and Ballast	157	1958	27
Caboose	27	1977	3
Other	28	1943	2
Subtotal	1,754	1981	
Privately Owned Cars Assigned to Alaska Railroad			
Flat	52	1979	8
Tank	230	1980	16
Subtotal	282	1980	
Total	2,036		

Source: Alaska Railroad 1980 Annual Report and Alaska Railroad Equipment Summary.

tainier-on-flat-car (TOFC/COFC) service. Another important component of the car fleet available to ARR are the tank cars, particularly the privately owned cars leased to oil companies served by the railroad and used for petroleum product distribution throughout the railbelt.

Of particular concern is the age of much of the ARR's own fleet and the limited capacity of many of the units. Only 340 cars have been purchased new since 1960 and only 140 cars since 1970. Even though the fleet has been well maintained, maintenance will become more costly as the cars continue to age. The aging problem also creates problems in ARR's interchange of traffic with other railroads. Federal safety standards limit the age of equipment which may be used in interline service. Some of ARR's equipment is already prohibited from participating in this traffic, while other cars are allowed to operate only with waivers.

The limited capacity of some cars could be detrimental to the railroad, particularly for transportation of some future bulk shipments. This is also a difficulty with ARR's tank car fleet (although the private cars assigned to ARR are modern units). With a few exceptions, however, this factor does not appear to limit service of existing traffic.

**Table 3**  
**Alaska Railroad Passenger Cars**

Type	Number Owned	Number Leased	Average Age
Coach	21	-	29
Dome Coach	3	4	28
Combination Passenger/Baggage	3	-	38
Food Service & Recreation	10	2	27
Baggage	6	-	20
Power Cars	4	-	38
Business Car	1	-	24
<b>Total</b>	<b>48</b>	<b>6</b>	<b>28</b>

Source: FY 1980 Annual Report, The Alaska Railroad.

The passenger car fleet consists of 48 units owned by the ARR and 6 leased from Amtrak for supporting the increased 1981 summer service. Table 3 shows the types and ages of the present equipment. Although not as old as the railroad's freight fleet, the passenger cars are an aging asset which will require a complete rebuilding if the present level of service is to be continued. Twenty-eight of the cars were acquired from the Union Pacific Railroad in 1971, eight came from the Southern Railway in 1980, and the remainder were rebuilt from surplus military hospital cars. In recognition of the need to extensively rebuild the current fleet, if passenger service is to continue, the railroad currently has ten cars being rebuilt under contract to General Electric.

In addition to revenue-producing equipment, the ARR also has 205 units of maintenance and emergency equipment. This includes such items as snow plows, cranes, and cars for housing mobile maintenance forces. This is supplemented by a considerable fleet of on- and off-track machinery used in maintenance and in-house construction work. Also, sufficient shop facilities and machinery are available to perform any level of maintenance required by the car and locomotive fleets; however, space and personnel limitations sometimes preclude programming a large volume of heavy repair or rebuilding work over a short period. Therefore, large projects, such as the previously mentioned passenger car rebuilding may be contracted to outside firms.

#### OPERATIONS

Clearly, the purpose of ARR's equipment is to provide train service to the railroad's customers.

Since rail operations provide the ARR's largest proportion of revenues, they are thus of special interest to this study. Table 4 lists the types of trains operated by the ARR and the number operated in the years 1976-1980; Table 5 indicates the total train miles produced by these trains on each segment of the railroad. Currently, the service can be categorized as follows:

1. Anchorage-Fairbanks - Passenger and mixed train service
2. Anchorage-Fairbanks - Freight service
3. Healy-Fairbanks - Coal trains
4. Anchorage-Palmer - Gravel trains
5. Anchorage-Whittier - Freight service
6. Anchorage-Whittier - Passenger shuttles
7. Anchorage-Seward - Freight service
8. Anchorage and Fairbanks industrial switching trains

Table 6 summarizes the present frequency of these operations along with the winter schedules for the same services. As can be seen, frequency of operation can vary considerably, particularly for the passenger and gravel trains. This leads to equipment utilization problems in that a sufficient number of cars and locomotives must be on hand to meet conditions but some can be expected to be surplus during slack seasons. This is aggravated by the difficulty that ARR, as a federal agency, has in

**Table 4**  
**Approximate Number of Trains Operated**  
(All are roundtrips unless otherwise noted)

Service	1980	1979	1978	1977	1976
Anchorage-Seward Freight	46	53	46	58	132
Anchorage-Whittier Freight	129	123	158	187	122
Anchorage-Palmer Local Freight	32	32	38	36	37
Anchorage-Palmer Gravel Trains	102	146	158	187	235
Anchorage-Fairbanks Freight	181	192	213	271	340
Anchorage-Fairbanks Mixed <sup>a</sup>	74	70	70	69	71
Fairbanks-Healy Coal Trains <sup>b</sup>	145	139	139	156	191
Fairbanks-Eelson Industrial Switchers <sup>b</sup>	280	243	243	280	330
Anchorage Airport Industrial Switchers <sup>b</sup>	298	280	280	277	295
Anchorage-Fairbanks Passenger	128	114	114	114	111
Anchorage-Whittier Shuttle Trains	228	222	221	234	209
Special Passenger Trains	14	13	10	-	-

<sup>a</sup>A mixed train includes both freight and passenger service in the same train.

<sup>b</sup>Estimates based on information provided by Alaska Railroad officials.

Source: Crew Call Sheets as computed by Interstate Commerce Commission; conversations with Alaska Railroad officials.

leasing supplemental equipment, a strategy common throughout the rail industry in such circumstances.

Also of interest is the changing traffic pattern that has been occurring during the past 5 years (Table 4). Since costs to operate additional trains (above some minimum level) do not rise as fast as the number of trains and while revenues tend to increase directly with the number of revenue trains, it is evident that the cyclic nature of Alaska's economy very directly affects ARR's net income. Table 4 graphically illustrates the difficulties faced by the railroad's management during the last 3 years of declining and stagnating economic activity.

Table 5 also shows the large part that passenger service plays in ARR operations. With passenger and mixed train service accounting for 48 percent of the 1980 train miles, it is obviously an important element in the cost structure of the railroad.

The length of ARR trains varies considerably by type of service. Freight trains to Seward generally comprise 40 to 60 cars while those to Whittier are 45 to 50 cars, depending on which barges they are meeting. The unit gravel train between Anchorage and Palmer consistently have either 60 or 80 hopper cars each. The Anchorage-Fairbanks freights range between 60 to 100 cars, and the Healy-Fairbanks freights range between 40 to 60 cars. The mixed trains between Anchorage and Fairbanks will have 2 to 6 passenger and 20 to 25 freight cars while summer passenger trains have 6 to 10 cars. In a particular

Rail Segment/Service	1980	1979	1978
<b>Healy-Fairbanks/</b>			
Freight	88,183	87,854	84,953
Mixed	15,259	16,157	16,157
Passenger	28,274	24,908	24,908
<b>Anchorage-Healy/</b>			
Freight	87,103	108,123	119,876
Mixed	23,158	35,107	35,107
Passenger	81,437	84,248	84,124
<b>Anchorage-Whittier or Seward/</b>			
Freight	27,205	28,868	29,526
Passenger	38,054	37,166	35,813
<b>ARR Total/</b>			
Freight	190,471	200,745	214,389
Mixed	48,418	51,264	51,264
Passenger	127,768	118,322	114,948
<b>Total</b>	<b>366,657</b>	<b>369,331</b>	<b>380,564</b>

Source: Computed by Interstate Commerce Commission from Train Mile Reports.

Table 6

Alaska Railroad Train Service  
(in trips per week)

Service	Summer 1981	Winter 1981-82
<b>Freight</b>		
Anchorage-Fairbanks	4	5
Anchorage-Seward	bi-monthly	1
Anchorage-Palmer/Local	bi-monthly	-
Anchorage-Palmer/Gravel	20	-
Healy-Fairbanks	3	5
Anchorage-Whittier/AHT <sup>a</sup>	every 3 days	1
Anchorage-Whittier/CNR <sup>b</sup>	every 9 days	bi-monthly
<b>Mixed</b>		
Anchorage-Fairbanks	3	1
<b>Passenger</b>		
Anchorage-Fairbanks	7	-
Anchorage-Whittier	8	3

<sup>a</sup>AHT = Alaska Hydro Train Railcar Barges.

<sup>b</sup>CNR = Canadian National Railway Railcar Barges.

Source: Alaska Railroad officials.

circumstance, maximum train length may be dictated by length of passing sidings, traffic demands, locomotive availability, union agreements, grades, barge capacity, or climate.<sup>4</sup>

## Traffic Base

The ARR transports only a few commodities between a small number of origins and destinations. ARR traffic logically divides itself into two basic components: local and interline. Of the two, the local movements (strictly ARR origins and destinations) generate the most tonnage but relatively low levels of revenue per ton-mile. The interline traffic is that interchanged between ARR and either Alaska Hydro-Train or Canadian National Railway through the car-barge facility at Whittier or the trailer and container movements through the Port of Anchorage that are forwarded by the railroad.

## Local

Tables 7 and 8 show the revenue tons transported by the railroad and the resulting revenues. As can be seen, the two consistently largest movements are (1) the coal moved from Healy to power plants at Clear Air Force Station, the University of Alaska in Fairbanks, Fairbanks, Fort Wainwright, and Eielson Air Force Base and (2) the gravel moved from Palmer to the three largest aggregate companies in Anchorage. Both are fairly short hauls and involve

<sup>4</sup>In the winter, decreased airbrake response time and increased train friction may limit length.

**Table 7**  
**Freight Traffic Revenue Tons Carried**  
(in thousands of tons)

Commodity	1961	1966	1970	1976	1977
Coal	853.8	880.2	823.9	882.3	886.8
Sand & Gravel	1,796.8	306.2	837.8	727.2	889.8
Petroleum	389.1	751.7	219.8	373.8	832.3
Forest Products	100.7	108.8	86.2	87.8	82.8
Manufactured Products	311.8	292.1	278.8	308.8	308.7
TOPFCOFC*	112.8	82.4	88.7	88.8	88.7
Other	8.1	8.8	7.1	10.1	18.1
<b>Total</b>	<b>3,362.1</b>	<b>1,741.3</b>	<b>1,808.8</b>	<b>2,177.7</b>	<b>2,308.3</b>

\*Trailer-on-flatcar/Container-on-flatcar.

Source: Alaska Railroad Annual Reports.

commodities of relatively low value.

Petroleum products represent the most lucrative of the larger, local movements. Since the construction of the North Pole refinery, this traffic has consisted principally of gasoline moving from Anchorage to Fairbanks. However, there has recently been a growth in the opposite direction in movements of jet and diesel fuel supplies from North Pole refinery to distributors in Anchorage and to the Anchorage International Airport. The railroad also delivers fuel to Fairbanks International Airport and the Anchorage Airport from sources other than North Pole.

The other significant intrastate movements include logs from Nenana to Seward,<sup>3</sup> cement from Anchorage to Fairbanks, pipe from either the Seward or Anchorage ports to Fairbanks for forwarding to the North Slope, and a limited amount of local trailer-on-flatcar business between Anchorage and Fairbanks.

#### Interline Traffic

Interline traffic differs considerably from local traffic. A major component is trailer-on-flatcar and container-on-flatcar traffic forwarded by the railroad on substitute service agreements with Toteam Ocean Trailer Express and Sea-Land Service Company between Anchorage and Fairbanks. While this traffic amounts to only 90,000 to 100,000 tons annually, it carries a premium rate because of its time sensitivity and long distance. This traffic produces almost as much revenue as the much larger coal movement. It is time competitive with over-the-road movements and

<sup>3</sup>The movement ceased in early 1961 with the collapse of the Japanese housing market.

generally carries a lower tariff than motor carriers offer.

The railroad port at Whittier receives the larger part of the interline business. This traffic is composed of all types of consumer and industrial goods including building products, furniture, chemicals, oil field service equipment, fertilizers, machinery, vehicles, foodstuffs, and other goods. Most of these cars with west coast origins arrive aboard Alaska Hydro-Train (AHT) barges from Seattle. However, cars from mid-western, eastern, and Canadian origins tend to move through Prince Rupert via Canadian National Railway (CNR) and the barges they operate. The AHT movements total 200,000 to 300,000 tons annually while CNR moves about 30,000 to 40,000 tons. While these two comprise only 10 to 15 percent of ARR's total traffic tonnage, they generate between 30 to 40 percent of the revenues because of the value of traffic and the proportion of the total that moves fairly long distances. Presently about 50 percent goes to Anchorage while the remainder goes to Interior or Kenai Peninsula points.

Several characteristics of ARR traffic are important to understand because they define both the present and likely future markets which the railroad will serve. The railroad, as an instrument of mass movement, is generally oriented toward industrial rather than consumer customers; it provides most of its services to a limited clientele which has direct siding access to the system. It should be remembered that rail service is attractive to a relatively limited number of shippers; however, these shippers usually comprise the basic elements of Alaska's economy, such as petroleum production and refining, mining, construction; timber; the military; wholesaling;

**Table 8**  
**Freight Traffic Revenue**  
(in thousands of \$)

Commodity	1961	1966	1970	1976	1977
Coal	64,837	83,717	83,207	83,807	83,118
Sand & Gravel	2,712	868	1,008	872	879
Petroleum	8,700	4,891	2,877	8,382	11,814
Forest Products	1,734	1,283	888	2,131	1,482
Manufactured Products	13,821	9,275	8,738	8,270	8,091
TOPFCOFC*	4,414	3,064	2,327	2,434	3,839
Other	181	188	114	118	244
<b>Total</b>	<b>94,000</b>	<b>21,884</b>	<b>18,188</b>	<b>22,991</b>	<b>78,483</b>

\*Trailer-on-flatcar/Container-on-flatcar.

Source: Alaska Railroad Annual Reports.

and, potentially, heavy manufacturing, agriculture, and chemicals. Thus, the railroad tends to serve only those organizations which ship in sufficient quantity to make use of the discounts offered by carload, multi-carload, or trainload tariffs. For local traffic, this implies that the primary shippers will be the very largest industries in the railbelt, particularly those related to energy, construction, and resource development. This is particularly true given the small size of Alaska's heavy manufacturing and agriculture sectors. Should these two traditionally rail-oriented groups develop into a significant force in the state, they would become important revenue sources for ARR.

The interline traffic, particularly the railcar movements, is a bit more complex. For these movements several factors are important in determining the appeal of rail service. While the ability to order in carload or greater amounts is important, several other factors also influence the shippers' choice of mode. An important characteristic of many of these movements is that they involve commodities which are either not produced or wholesaled in the Seattle area or which can be procured more inexpensively by going beyond Seattle and dealing in sufficiently large quantities. This is particularly important for the Canadian National traffic. Another important feature of these movements is that they usually involve commodities which normally move by rail on the continental rail system, thus, making it attractive to avoid an additional set of loading and unloading changes at the port of embarkation. A fourth characteristic of considerable importance is the distance of a shipper's plant or warehouse from a rail siding. Only 5 to 10 percent of railcar shipments are distributed to their consignee from a central public warehouse or forwarding facility by truck, and these usually to the smaller, more infrequent shippers.

Together, these factors define a fairly narrow market to which ARR's interline service can appeal. However, as noted earlier, it is a very important market. It is also a fairly volatile one which varies considerably with the levels of activity in specific industrial economic sectors (i.e., construction), rather than being oriented toward the more stable consumer sector. While innovative marketing can stabilize these patterns somewhat and also potentially increase market share, it is unlikely that it can penetrate more than 30 percent of the U.S.-Railbelt Alaska trade without a significant shift in the texture of the Alaska economy or a dramatic change in competition. It is also notable that ARR's ability to enlarge its share of the market is limited by the capability and number of railcar barges which private operators have available and are willing to commit to the service.

#### Outlook

During the next 3 to 5 years the railbelt economic prospects provide considerable encouragement for the stabilization of the railroad's freight operations at a sufficiently high level to keep it viable. There are enough moderate-to-large-scale construction projects to provide firm prospects for a continuing high level of traffic. In addition, the prospect of moving 800,000 metric tons of coal annually from Healy to a Seward export terminal provides an important long-term, as well as seasonal, element of stability. It is also the type of movement for which the railroad is ideally suited. It adds significantly to revenues without proportionally increasing costs by utilizing already existing capacity and capacities.

#### MAJOR RESTRUCTURING ISSUES

Clearly, there is much more to the Alaska Railroad than simply the enumeration of the physical and operational features indicated above. Its land holdings, employees, finances, competitive and regulatory environment, and passenger service must also be considered in any restructuring of the property. These issues have emerged as being the most critical now being faced by the state or any new potential owner or operator of the Alaska Railroad.

#### Land

*The following discussion drawn through "Native Village Selection Area Claims" page 14, was prepared by the Office of General Counsel of the Federal Railroad Administration.*

Land is perhaps the most valuable fixed asset currently controlled by the Alaska Railroad (ARR). It is also an extremely important asset for operation, maintenance, and traffic development purposes. The total lands under control of the railroad are about 38,000 acres. The ARR has acquired its land through executive order, public land order, purchase, trade, and BLM trust deed. The earliest acquisitions were in 1914—the latest (.2 acres), in 1970. While these holdings are not extensive, they are among the most valuable industrial lands in Alaska. Of the total lands, about 12,000 acres are used for the right-of-way. The remaining 26,000 acres are used or reserved for marine and rail terminals, gravel resources, right-of-way erosion protection, industrial leases, gravel and rock reserves, railroad administration, and future development and facility expansion. Since the Alaska Native Claims Settlement Act of 1971 (ANCSA), both the ownership and use of these lands has been clouded. Table 9 indicates the location and quantities of land and the Native villages that have filed claims against particular parcels.

The railroad land holdings fall within seven

Native village selection areas and four Native regions that were established by ANCSA. Approximately 8,035 acres of railroad land, or 21 percent of the total holdings, are located in Native village selection areas and are potentially subject to claims by Native village corporations. Substantially all railroad land, whether or not located in a Native village or regional area, may ultimately be claimed by Cook Inlet Region, Incorporated (CIRI) under the special authorization that allows CIRI to select land outside its regional boundaries.

#### Right-of-way Lands

The main line right-of-way from Seward to Fairbanks was established by executive order in 1915.<sup>6</sup> The right-of-way lands of two small, private railroads were purchased to form the first 70 miles north from Seward and part of the right-of-way approaching Fairbanks. The balance of the original right-of-way was reserved from public domain by the Alaska Engineering Commission under authority of the Alaska Railroad Act and the 1915 executive order. Other public lands have been acquired over the years and now provide branch line connections to Palmer, Whittier, and other towns. Spur lines have been constructed to provide access to airports and coal fields along the railbelt. Defense lands have been transferred to the railroad for construction of rail lines into several defense installations. The railroad has also purchased some right-of-way lands from private individuals or from state and local governments. The right-of-way is mostly 200 feet wide, with some variations. The right-of-way is wider at several locations where needed for control of wash-outs and for steep cuts and fills. Narrower rights-of-way are common on several spur lines where the railroad passes through military reservations or where other factors hindered the acquisition of a full 200-foot right-of-way.

#### Non-Right-of-Way Lands

The 26,521 acres of railroad land other than right-of-way lands were acquired by executive orders, public land orders, transfers, purchases from private owners, and by trade for other lands with state and local governments. These land parcels range in size from 0.4 acres up to 5,830 acres at twenty-seven locations adjacent to the right-of-way and three smaller locations off the railbelt. These lands were acquired to support operation of the railroad. About 1,000 acres were leased to businesses which provide lease revenue and generate rail traffic for the railroad.

<sup>6</sup>Executive Order No. 1, April 10, 1915.

Another 9,000 acres are used as active gravel and rock quarries or 425 held for the railroad's future gravel and rock needs. Other parcels are used for storage, maintenance, and terminals. About 100 acres are used for the operation of the Yutana Barge Line at Nenana and another 570 acres are part of the Seward and Whittier port and terminal facilities. The largest three parcels are located in the remote areas of Curry (4,970 acres), Midway (3,811 acres), and Healy (5,830 acres). These large parcels are mostly vacant and are held by the railroad for controlling watershed, providing gravel resources, and allowing future development or expansion of the railroad.

The three pieces of land not adjacent to the right-of-way are a presently leased 50-acre parcel in Valdez that was used to handle railcars from ocean-going barges in support of the Alaska oil pipeline construction and two parcels totaling 60.4 acres (60 acres at Holy Cross and 0.4 acres at Tanana) that are leased as docking and storage areas by Yutana Barge Lines.

#### Native Village Selection Area Claims

Table 9 shows railroad lands that are located within Native village selection areas. Claims have been filed by Native village corporations for virtually all railroad lands that lie within these areas. The extent to which these lands will ultimately be conveyed to the village corporations will depend on determinations made by the Department of the Interior as to which lands are actually used by the railroad and, therefore, exempt from selection under section 3(e) of ANCSA. The Department of the Interior published final 3(e) regulations that went into effect in late 1980, setting narrow standards for determining which lands are actually used by the railroad. Under the regulations, the railroad would not retain any leased land or gravel reserves claimed by a Native corporation, and the railroad's right-of-way would be converted into a limited easement right across land that would be conveyed to the Native claimants. In the first major claim for railroad land within a village selection area, the Federal/State Land Use Planning Commission (LUPC), an advisory body established by ANCSA, recommended that 90 percent of the railroad's land holdings claimed by the Eklutna Village Corporation should be conveyed. This recommendation includes all leased lands, all right-of-way lands, and substantially all gravel reserves and would leave the railroad with only a small storage yard and one gravel pit in this area. The railroad would retain only 240 acres out of its present 2,700 acres in this area. Although the 3(e) regulations are now final, the Department of the Interior has neither formally ruled on

Table 9

## Alaska Railroad Lands

Location	Total Acres	Acres Leased (Annual Lease Revenue)	Acres Containing Gravel & Rock Reserves (Est. Cubic Yards in Ground)	Acres Within Native Selection Area (Name of Native Village)
1. Seward	299	55 (\$123,000)	---	---
2. Crown Point	81	1 (\$1,800)	---	---
3. Moom Pass	5.6	---	---	---
4. Portage	900	---	---	---
5. Whittier	272	15 (\$3,500)	100 (\$150,000)	---
6. Anchorage	661	332 (\$1,500,000)	---	---
7. Eagle River	1,800	0.1 (\$9,400)	1,450 (9,000,000)	1,800 (Eklutna)
8. Birchwood	251	---	150 (1,800,000)	251 (Eklutna)
9. Eklutna	343	---	343 (2,300,000)	343 (Eklutna)
9a. Eklutna-Blm Gravel Reserve	301	---	301	301 (Eklutna)
10. Matanuska	189	---	---	199 (Eklutna)
11. Pittman	145	---	145 (2,100,000)	145 (Eklutna & Knik)
12. Willow	58	---	---	---
13. Gravel Pit	215	---	215 (2,200,000)	---
14. Talkeetna	144	---	---	---
15. Curry	4,970	---	1,200 (10,000,000)	---
16. Gold Creek	26	---	---	---
17. Chulitna	100	---	100 (1,500,000)	---
18. Midway	3,811	---	1,000 (3,900,000)	---
19. Colorado	44	---	44 (650,000)	---
20. Broad Pass	1,070	---	600 (1,600,000)	630 (Cantwell)
21. McKinley Park	18.4	0.3 (\$5,700)	---	---
22. Healy	5,830	1 (\$13,380)	600 (5,200,000)	---
23. Lignite	1,275	7 (2,400)	---	---
24. Clear	2,780	---	2,780 (40,000,000)	640 (Nenana)
25. Nenana	379	104 (\$221,000)	---	279 (Nenana)
26. Fairbanks	46	92 (\$250,000)	---	---
27. Holy Cross	50	4 (\$1)	---	60 (Holy Cross)
28. Tanana	1	---	---	0.4 (Tanana)
29. Moose Creek	89	---	---	89 (Eklutna)
30. Valdez	50	17 (\$41,250)	---	---
<b>Subtotal</b>	<b>26,521.4</b>	<b>339 (\$2,171,231)</b>	<b>9,028 (80,400,000)</b>	<b>4,737.4</b>
<b>% of Subtotal</b>		<b>3.3%</b>	<b>34.0%</b>	<b>17.9%</b>
		<b>Right-of-Way Lands</b>		<b>2,863.9*</b>
Seward-Fairbanks	10,677.2	---	---	---
Portage-Whittier	184	---	---	---
Fairbanks-Eielson	470.3	---	---	---
Healy-Suntrans	111.5	---	---	---
Matanuska-Chickaloon	434.1	---	---	434.1*
<b>Subtotal</b>	<b>11,877.1</b>			<b>3,298</b>
<b>% of Subtotal</b>	<b>27.8%</b>			
<b>TOTAL</b>	<b>38,398.5</b>			<b>8,035.4</b>
<b>% of TOTAL</b>				<b>20.9%</b>

\* Right-of-way miles in village selection area: Nenana, 40.5 miles; Cantwell, 38.7 miles; Knik, 3.5 miles; Knik and Eklutna 43.8 miles; Eklutna, 30.6 miles; Chickaloon, 27.3 miles.

Source: Alaska Railroad records.

the Eklutna claim nor begun to process other claims. However, Department of the Interior officials in Alaska and Washington, D.C. have indicated a willingness to accept the bulk of the LUPC's recommendations. Selections of railroad land in other village areas are expected to follow the outcome of the Eklutna claims. If the result for all railroad land located in village selection areas follows the LUPC recommendation, the railroad would lose up to 90 percent of its lands located in village selection areas. This could mean the loss of 7,554 acres, or 19.8 percent of the railroad's total land holdings, the loss of 19 million cubic yards of gravel and rock reserves; and the direct loss of \$230,000 per year in lease revenue.

#### Cook Inlet Regional Corporation Selection of Railroad Land

A problem that could affect virtually all railroad lands is the special selection authority of Cook Inlet Region, Incorporated. CIRI considers substantially all railroad land holdings, whether located in Native village selection areas or not, to be eligible for selection. CIRI has formally asked that all railroad lands, except those conveyed to village corporations, be placed into the selection pool that was created by the special statutory authority for CIRI to select lands outside its regional boundaries. To date, CIRI's broad interpretation of the law has not been accepted by the Department of the Interior, which maintains that the CIRI selection pool cannot include railroad lands outside the village selection areas. However, CIRI is expected to challenge the Department of the Interior's view. If CIRI is successful in reversing the Department of the Interior's opinion either administratively or in court, substantially all railroad lands would be subject to CIRI selection. It would then be necessary for the Department of the Interior to make a 3(e) actual-use determination for all railroad lands selected, not just railroad lands located within village selection areas. The narrow standards in the final 3(e) regulations would then be applied to all railroad lands and could result in the loss of virtually all ARR's leased lands, gravel reserves, and other properties along the railbelt.

#### The Uses of Railroad Lands

The authors feel that the railroad's lands are as essential to its operations as are any of the other ARR assets. They believe that if the ARR is to act as a part of the market economy of the state, it must be capable of exercising some degree of control over the lands with which it is associated. Such control ranges from absolute and perpetual surface control over

some of the land to more limited powers over other types of real property.

Lands now under the jurisdiction of the ARR may be categorized as follows:

1. Main line and branch line rights-of-way.
2. Terminals and ports.
3. Lands leased to traffic-producing tenants.
4. Material source lands (for example, gravel deposits).
5. Lands leased to nontraffic-producing tenants.
6. Lands held for future operations and traffic development.
7. Former rights-of-way.
8. Other holdings.

In the authors' opinion, each of these types of land requires specific protection if it is to continue supporting the railroad in its role as a functional participant in the state transport network.

Requiring the most protection are the main line and branch line rights of way. The nature of railroad operations requires that these lands be under complete control of the railroad, including at a minimum the right to:

1. Have complete freedom to add to or delete from the land any structures, roadbeds, adjacent rocks, or gravel or to recontour the land as necessary.
2. Move track within the right-of-way or to add or delete track.
3. Provide loading and unloading facilities for railroad customers or for railroad purposes.
4. Add structures as may be necessary for operation.
5. Remove any vegetation which may be required to operate or expand the railroad's services.
6. Fence the right-of-way.
7. Operate any and all trains necessary.
8. Restrict or grant access to persons or vehicles as it sees fit.
9. Construct and maintain any drainage facilities necessary to preserve the right-of-way.
10. Make any provisions necessary to protect the operational capability of the right-of-way even if this requires access to and control of lands beyond the normal right-of-way limits (e.g., avalanche, flood control).
11. Take such action as may be necessary to safely operate in situations where conflict with other transport modes may exist.

12. Place all necessary communications and signal devices within the right-of-way or to maintain separate rights-of-way for these items where necessary.

The authors believe that all of these elements must be available to enable the railroad to maintain the property, provide for safe operations, protect the public, meet public regulatory requirements, operate efficiently, and be responsive to economic opportunities and influences. The normal mechanism required to exercise these responsibilities is fee ownership of the property by a railroad. In those relatively unusual circumstances in which a railroad cannot obtain fee ownership, then it occupies a land parcel via a railroad easement. This gives the railroad complete control of all surface rights to the property, including the right to exclude the fee owner from the property and to exercise all of the functions noted above. The usual railroad right-of-way is 100 feet to either side of the center line of the main line. It is very unusual for less than this width of land to be available; however, wider rights-of-way are not uncommon. The Alaska Railroad's enabling legislation specifies a right-of-way width of 200 feet total with a supplement of 50 feet for purposes of operating a communications system where necessary. Terminal or port lands usually have no specific width related to track location. Rather, they are specified in the more traditional types of descriptions used generally in real property.

#### Lands Providing for Railroad Traffic Development

This category of land is second in importance to that of rights-of-way and terminals. The importance of this category goes beyond the lease income generated by the property to the very essence of railroad traffic and marketing. An analysis of the Alaska Railroad's traffic indicates that only a very small portion of operating revenues are derived from customers whose businesses are not directly adjacent to the railroad's right-of-way.<sup>7</sup> The efficient loading or unloading of carloads requires a customer to have direct access to railroad facilities. This factor is of such importance that it is usually quite difficult to serve a customer who is not directly linked to the railroad. One of the primary tools available to a railroad to solicit this type of traffic is land adjacent to its right-of-way on which a shipper can locate his facilities or store his goods. Thus, the lands available for leasing to traffic-producing customers contribute much to the ability of the railroad to sustain its present operation and to be economically viable. Likewise, those lands which are available for future

<sup>7</sup> See "Traffic Base," page 9.

lease to traffic-producing customers represent the long-term capability of the railroad to continue its existence as an economic enterprise.

In the authors' view, the only mechanism which will permit the railroad to manage these lands effectively is complete control of their use. While there is a clear obligation in ANCSA legislation to honor existing leases whether the landowner is the railroad or another party, the only manner in which a continuing commonality of interest between the railroad and future lease holders can be maintained is by providing ownership of those parcels for the railroad or by requiring any future owner to use them for rail traffic purposes so long as the railroad exists. It is not at all likely that the land development interests of the railroad and a future, non-railroad owner would coincide since land sale or lease for non-railroad purposes would frequently generate much higher income than would typical railroad uses.

#### Lands, Improvement, and Construction

This category includes those properties from which materials such as gravel and rock are obtained for maintenance and improvement. The authors feel that a railroad must have long-term access to such land as well as a fairly unrestricted right to remove materials as required. These needs are basic to the continuing operation of a railroad, because any railroad's roadbed and track will deteriorate rapidly if not regularly maintained and ballast renewed periodically. This renewal requirement is particularly critical in Alaska where the amount of moisture during spring breakup can, if not controlled, make track unusable within a single year. In addition to regular maintenance, there may be very large short-term demands for rock and gravel to repair damage from floods, avalanches, and earthquakes. The ARR annually requires an estimated 200,000 tons of gravel and 40,000 tons of rock for normal maintenance. In addition to this amount are requirements for emergencies and for track improvements, industry access, and alignment improvements. The latter items result from changing demands of railroad traffic and operation patterns. These are produced by such factors as changes in car types and commodities (such as bulk commodities requiring more substantial track), frequency of operations (more traffic requires more frequent attention regardless of commodity), types of operations (need to improve transit times to attract or keep time-sensitive traffic), or the need to improve operating efficiency (lower maintenance costs or operating costs by realigning track).

Unlike the previous land categories, there is no

absolute requirement for ownership of the property if the railroad has the access and extraction rights mentioned previously or has access to commercial gravel. However, without railroad ownership of the materials, the costs of maintenance and improvement will be increased in two ways. One will be the commercial cost of gravel and rock. Having to purchase gravel at the current cost of \$13 per ton would cost the ARR a minimum of \$2,600,000 annually for normal maintenance. These costs would amount to an additional charge of \$1.49 for each revenue ton carried by the Alaska Railroad (in 1980 dollars). In addition to this would be any aggregate demands for emergencies, new construction, or rebuilding. These additional costs would either have to be passed to shippers (and, thus, largely to consumers) by freight rate increases or would have to be supported by a public subsidy. Should increased freight rates be chosen, they will probably make the railroad less competitive and result in higher subsidy demands.

#### Lands Leased to Nontraffic-Producing Tenants

The lands leased to nontraffic-producing tenants are not necessary to the continued operation of the railroad, except where the lands can be converted to traffic-producing properties either by lease to customers for plant location or by exercise of mineral rights. How much these holdings may assist the railroad in its future operations will largely depend on location in relation to commercial opportunities. Even though the presently leased properties are not essential to the operational survival of the railroad, they do provide a major source of income which permits lower freight rates than might otherwise be the case. Should the railroad lose control of this land, the lost revenue would have to be obtained from other sources—either higher freight rates or public subsidy.

#### Former Rights-of-Way Land

This final land category is probably important only in terms of the future resource development role that policymakers may wish the railroad to play. Specifically, the railroad currently controls the land of a former right-of-way extending eastward up the Matanuska Valley approximately 30 miles past the Sutton, Eska, and Jonestown coal fields to Chickaloon. This right-of-way provides access to coal resources and will be an essential ingredient in any scheme to export coal from the Matanuska Valley.

According to ARR management, any railroad depends almost entirely upon the way it can use its lands if it is to operate effectively and to market that operation reasonably. Without this ability to utilize

lands, any railroad is clearly an unattractive investment. Therefore, without a satisfactory resolution of the current questionable status of Alaska Railroad lands, any potential owner should be hesitant about becoming involved with the railroad. If he should do so without obtaining the types of guarantees specified above, it should be with the clear understanding that this course of action may well lead to a large and continuing drain upon his treasury.

#### Employee Concerns and Obligations

##### Present Situation

The Alaska Railroad (ARR) is a federal agency under the Federal Railroad Administration (FRA), U.S. Department of Transportation. Few of the positions held by employees of the Alaska Railroad, the only railroad operated by the federal government, are found in other federal agencies since the majority are unique to railroad operations. The ARR employees, having significant railroad operational experience and knowledge, represent one of the railroad's most valuable assets. In addition, the ARR employees have knowledge of the special railroad operational requirements for Alaska, with its difficult climatic conditions and associated maintenance requirements.

**Declining Work Force.** After the completion of the pipeline, the Alaska Railroad experienced declining traffic and revenues until the 1981 fiscal year (June 1980). Since that time, significant traffic and revenue increases have occurred despite high interest rates, inflation, and generally poor national economic conditions. In the face of increasing costs and declining revenues and traffic, the Alaska Railroad has annually reduced its work force over the last 5 years. For example, in FY 1976, the railroad employed an average of 1,025 persons, but by April 1981, this workforce totaled only 629 employees, including both permanent and temporary workers.<sup>8</sup>

The following table demonstrates the personnel levels by department in mid-April 1981, according to a railroad manning report (see Table 10).

**Organized Labor and the ARR.** As regards organized labor for its employees, the Alaska Railroad is similar to private railroads in the continental United States. Unlike private sector railroads, however, most labor agreements with the Alaska Railroad

<sup>8</sup>Because the Alaska Railroad is a federal agency, there is substantially larger lag between the acknowledgment of declining revenue traffic and a reduction in the number of employees than would be experienced in private railroad operations.

Table 10  
Authorized vs. Actual Numbers  
of ARR Employees

Department	Authorized Positions	Total Employees	Permanent Employees	Temporary Employees
Administration	96	82	77	5
Transportation	228	218	202	16
Engineering	270	181	137	44
Mechanical	142	138	130	8
Marketing	14	10	8	2
Total	757	629	588	74

are perpetually in effect until either organized labor or the railroad management wishes to open the labor agreements for renegotiation. This factor has interesting long-range implications in view of the potential transfer of the railroad's ownership and operations.

At the present time, five unions represent the Alaska Railroad employees. These are listed in Table 11 along with the number of employees which each represents.

**The Full-Crew Law.** An additional area of concern regarding employee operating agreements and a change from federal status involves a current Alaska statute, the full crew law—the only one left in the United States. It requires a five-man train crew, including a locomotive fireman, for all trains. Currently, because it is a federal agency, the ARR is exempt from this law and operates its trains on the basis of agreements negotiated with labor organizations. Usually, these require only three- or four-man crews for each train. If Alaska does not repeal this law during the course of any restructuring, it is unlikely that the railroad would ever be a self-supporting operation. If the present full crew law continues in force, the state should be prepared to pay several million dollars annually in subsidy for unnecessary labor.

Thus, the Alaska Railroad's employee situation is more complex than that of other railroads since its employees are generally not only members of various labor unions (similar to other railroads) but are also federal employees with all of the rights and benefits which are afforded participants in the federal government's civil service system. The implications of these double protection rights and benefits for the proposed transfer are far reaching and significant.

#### Financial Implications

Another significant consideration in the poten-

tial transfer of the Alaska Railroad from the federal government to the State of Alaska is the financial implications of employee protection, including federal retirement benefits.

The current employees of the Alaska Railroad have participated in and contributed to the federal Civil Service Retirement and Disability Fund. The Alaska Railroad has matched the contributions made by each employee during their employment to date, and these contributions have been made out of railroad revenues. The federal Civil Service Retirement System is under the jurisdiction of the U.S. Office of Personnel Management.

The Civil Service Retirement and Disability Fund is the accumulation of money held in trust by the U.S. Treasury for the purpose of paying annuity, refund, and death benefits to persons entitled to them. The present Alaska Railroad employees are among the persons entitled to these benefits.

The identified federal commitments which were made by the Alaska Railroad to employees at the time of employment include the total cost of relocation back to the point of recruitment of any employee and family recruited from outside Alaska when they choose to return. Other employee commitments include participation in the Federal Employees Group Life Insurance Program, health insurance benefits, accrued sick and annual leave, credit for time served as federal employees, turnaround trips to the point of recruitment every two years (as distinguished from relocation), and protection against arbitrary dismissal by the Merit Systems Protection Board.

There are many unanswered questions related to the employees and protection of their rights. These questions can best be answered and the problems

Table 11  
Labor Organizations Representing  
ARR Employees

Organization	Employees Represented
American Train Dispatchers Association	20
Brotherhood of Railway Carmen	37
United Transportation Union	127
American Federation of Government Employees*	315
International Association of Machinists and Aerospace Workers	80
Total	579

\*The American Federation of Government Employees represents both white- and blue-collar workers.