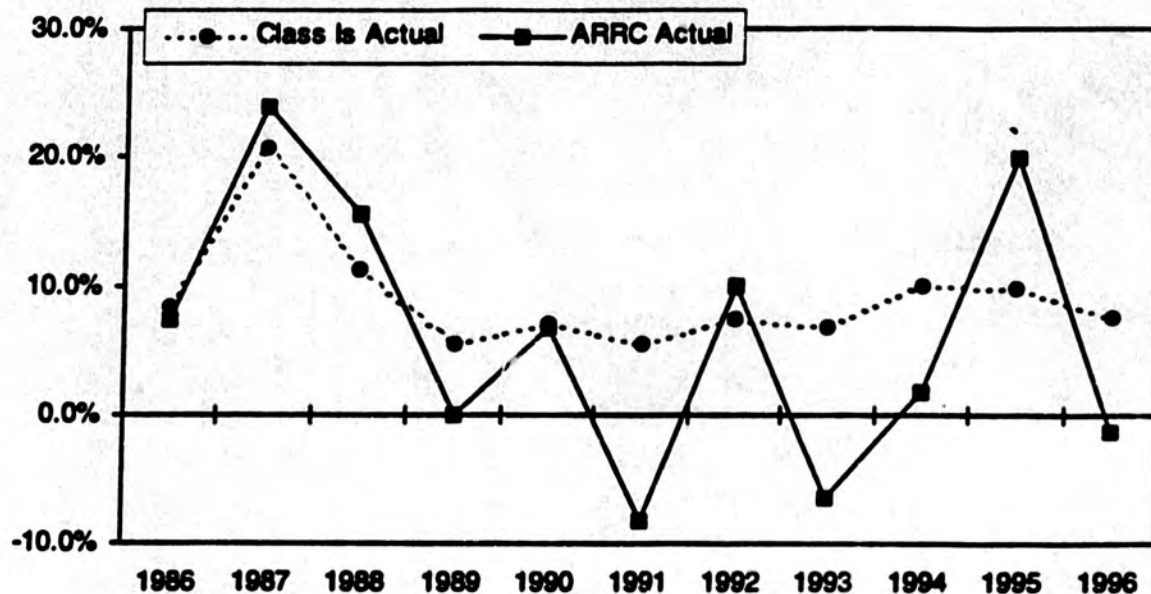


ALASKA LEGISLATURE SPECIAL COMMITTEE/SUBJECT FILES 8672

2689 SCOMM 122: COMMISSION ON PRIVATIZATION. . . , 1999

Exhibit II-2
ARRC Staff Productivity versus U.S. Class I Railroads – 1986-1996
 (percent annual change in average revenue ton-miles per employee)



Contents

Introduction

Section I. Scope of the Audit and Personnel Involved

Section II. Update of ARRC's Financial and Operating Performance

→ Section III. Findings of the Management Audit

Section IV. Issues and Recommendations

Appendixes

Appendix A. Safety Database

Appendix B. Resumes

Section III: Findings of the Management Audit

This section presents the basic findings of Mercer's review of the railroad. Each year, Mercer's audits generally focus on one or two topics, rotating among major functional areas. This approach has allowed us to examine most railroad activities in detail over time. Additionally, Mercer provides every year a somewhat less intensive review of other elements of the railroad's functions.

This year, ARRC requested that we specifically focus our efforts on two areas:

- A review of the reasons underlying the persistent occurrence and recent alarming increase in employee personal injuries during the past two years
- A review of the proposed locomotive replacement program, which represents a dramatic change in fleet composition with little precedent on other railroads of ARRC's size and operating characteristics

Safety Review

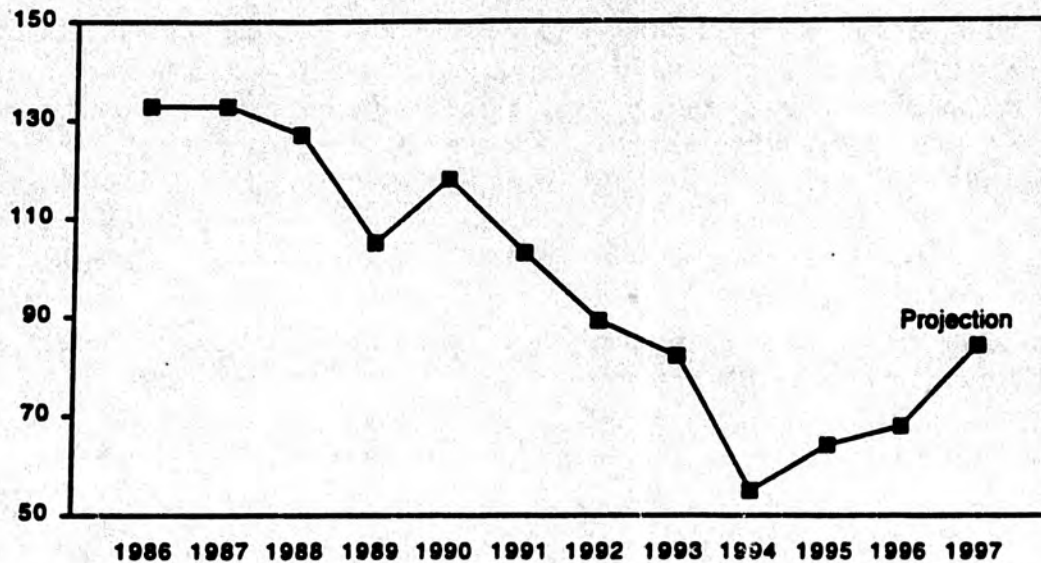
Overview

Mercer recognized that a persistent personal injury problem existed on the railroad during our first audit in 1991. We reported at the time that there appeared to be a "lack of commitment from top-level management, low morale, and a low priority given to safety in the line departments," and offered several recommendations.

Late in 1991, a number of changes were made in top management and the commitment to safety was significantly strengthened. The president of ARRC placed a much more intensive and aggressive emphasis on personal injury prevention activities and this attitude permeated throughout the entire organization. Consequently, continuous improvement was made in reducing total injuries up until mid-1996. During 1996, the incidence and severity of employee personal injuries increased; in 1997 thus far the situation has become even worse. Mercer believes that it is most appropriate for ARRC to be very concerned about this alarming rise in injuries.

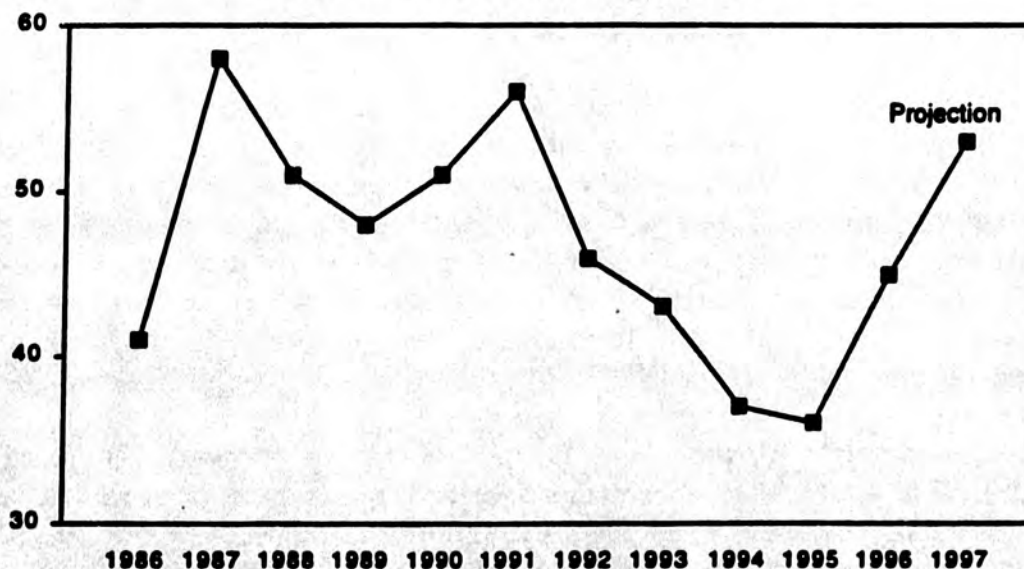
Exhibits III-1 through III-3 provide an overview of employee personal injury statistics for 1986 through 1997 using the three most common methods for reporting personal injuries: total incidents, FRA "reportables," and injuries resulting in lost time. As shown, the total number of personal injuries declined dramatically through 1994 and those that were classified as FRA "reportables" nearly kept pace. Lost time injuries, however, did not follow this downward trend.

Exhibit III-1
Annual Number of Total Incidents
 (fourth quarter of 1997 is projected)



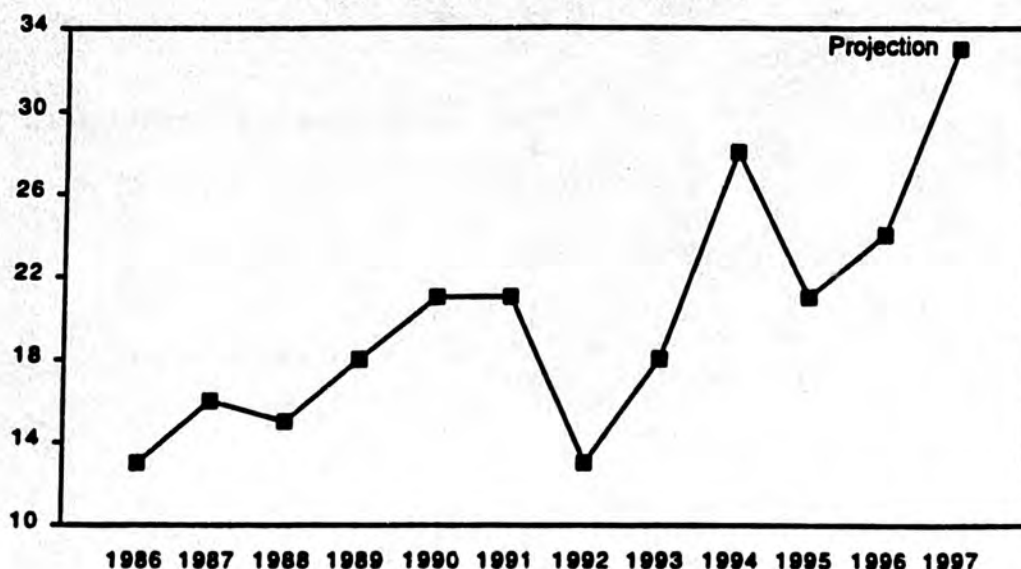
Note: Projected 1997 was based on actual results over the first nine months projected to twelve months, assuming the same injury rate occurs during the last three months of the year.

Exhibit III-2
Annual Number of FRA Reportable Injuries
 (fourth quarter of 1997 is projected)



Note: Projected 1997 was based on actual results over the first nine months projected to twelve months, assuming the same injury rate occurs during the last three months of the year.

Exhibit III-3
Annual Number of Lost Time Injuries
 (fourth quarter of 1997 is projected)



Note: Projected 1997 was based on actual results over the first nine months projected to twelve months, assuming the same injury rate occurs during the last three months of the year.

Methodology

To better understand the problem and to identify possible steps that might be taken to reduce injuries, Mercer undertook a comprehensive review and analysis that included:

- Interviews with the president and CEO, a board member, operating vice presidents, department heads, health and safety manager, and administration leaders
- A review of the safety rule manual, personal injury and investigation report requirements, safety programs, external evaluation of employee perceptions of ARRC personal injury program and activities, FRA statistics, and proposed measures to be implemented
- Development of a database that catalogues all personal injuries from January 1, 1995, through September 30, 1997
- Gathering statistics on the three measures of personal injury reports from 1986 through 1997

Database Development

To properly assess the nature of personal injuries sustained by employees at the railroad, Mercer compiled a detailed database of personal injuries for first quarter 1995 through third quarter

CORRECTION

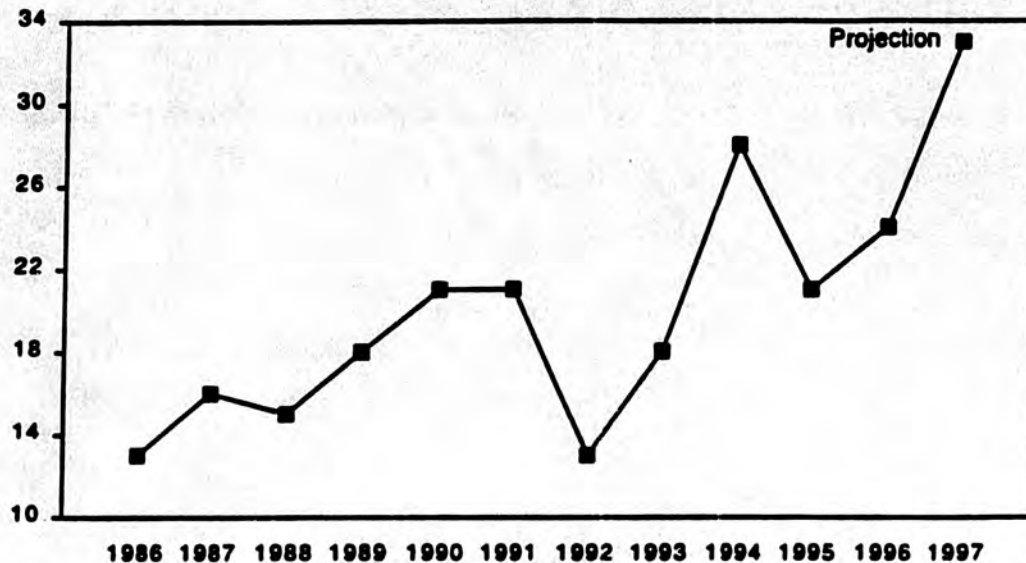
**THE FOLLOWING DOCUMENT(S)
HAVE BEEN REFILMED TO
ASSURE LEGIBILITY OR PAGINATION**



Rev. 6/98

Central Microfilm Services
Department of Education & Early Development
State of Alaska

Exhibit III-3
Annual Number of Lost Time Injuries
 (fourth quarter of 1997 is projected)



Note: Projected 1997 was based on actual results over the first nine months projected to twelve months, assuming the same injury rate occurs during the last three months of the year.

Methodology

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Database Development

To properly assess the nature of personal injuries sustained by employees at the railroad, Mercer compiled a detailed database of personal injuries for first quarter 1995 through third quarter

1997. To compile the database, Mercer undertook a detailed review of each individual personal injury report and then assessed the likely cause of injury.¹

- **Factual Information** – Mercer's database includes the following information about each incident, obtained from individual personal injury reports:

1. Employee name, age, occupation, and department and date of incident
2. Years of service in present occupation
3. Seriousness of injury (lost time, FRA, or non-reportable)
4. Number of lost time and/or light-duty days
5. Type of injury (sprain, cut, etc.)
6. Body part affected (head, shoulder, back, etc.)
7. Supervisor's name

- **Probable Cause Information** – Considerable time was devoted to categorizing each incident according to probable cause and preventability. This was the most challenging aspect of developing the database, as it required a detailed review of all of the factors and information available. Unfortunately, a number of the reports provided insufficient detail, so that some guesswork was required. In developing causal factors, Mercer drew upon the combined expertise and experience of the members of the Mercer team, including the team's knowledge of ARRC operations.

The following criteria were used to categorize each personal injury into what Mercer considers to be meaningful groupings and to determine the common sense reasons for most incidents. An assessment was made for injuries in two of the categories, "work practices" and "unsafe conditions," to determine if ARRC could have possibly prevented the injury.

- **Carelessness:** Personal injury could have been prevented through the exercise of more care in performing duties, and the injury occurred either because the employee did not know any better, did not use good judgement, or was not paying attention.
- **Work Practices:** Injury occurred when performing routine duties. Culpability was often shared between the employee and the railroad. In some cases, improper work practices were followed and/or wrong tools used.
- **Unsafe Conditions:** Injuries caused by an event beyond the control of the employee; some of these, however, could have been prevented by the railroad.

¹ Appendix A provides an excerpt of the database, showing the information used for statistical analyses. This excerpt includes all of the information discussed under "factual information" and "probable cause information" except employee and supervisor names and employee occupations.

- **Non-event:** Personal injury reports that could not be traced to any particular causal activity by the employee, such as a slip, trip, fall, etc. Some represented a recurrence of a prior injury.

Reportable Injury Measures

Mercer examined personal injury rates on the basis of the three measures most commonly used to evaluate a railroad's performance with regard to the success of its personal injury prevention activities:

1. **Total incidents** – Includes all instances of personal injury experienced while on duty, regardless of the level of severity.
2. **Federal Railroad Administration (FRA) reportable injuries** – FRA reporting criteria require that an incident be reported to the FRA if:
 - a. Time is lost due to the injury
 - b. Light duty is required
 - c. Medical treatment is required beyond first aid
 - d. Certain medication is prescribed

For FRA reporting purposes, it is not necessary that an employee lose time. It is mandated that railroads report personal injuries in the prescribed manner and that audits be performed to ensure compliance. FRA criteria provide a wide latitude as to the seriousness of the injury; based on the criteria, a reportable injury can range from one that is very serious or a fatality to a very minor one that requires only over-the-counter medication. Mercer believes the real value of the FRA's "reportable" requirements is that they provide a consistent method for reporting by all railroads and can thus be used for benchmarking purposes to compare railroad performance.

3. **Lost time injuries** – Those injuries that cause an employee to lose time from regular duties, regardless of the number of days lost. This is also considered an FRA "reportable."

Overall Comparison of ARRC with Peers

Mercer began its analysis by comparing the number of FRA reportable injuries per man-hours worked for ARRC and its peer railroads. As shown in Exhibit III-4, ARRC has usually ranked toward the bottom of the group in the past 10 years and has never placed any better than the mid-point on this measure. ARRC's ratio of reportable injuries per man-hours did however decline from 1991 through 1994, before rising again. A look at the first six months of 1997 shows a large increase in the ratio, thus dropping ARRC to the bottom of the ranking for the first time.

Exhibit III-4
Reportable Injuries for ARRC and Peer Railroads

Year	ARRC Ranking	Total Railroads in Class	Reportable Injuries per 200,000 Man-Hours	Total Hours Worked (000)	Total Reportable Injuries
1986	7	13	4.54	1,808	41
1987	12	16	11.18	1,037	58
1988	17	22	9.63	1,059	51
1989	13	20	8.49	1,130	48
1990	16	26	8.83	1,155	51
1991	17	27	9.69	1,156	56
1992	12	24	7.73	1,191	46
1993	14	20	7.50	1,147	43
1994	10	19	7.24	1,022	37
1995	15	21	7.58	946	36
1996	16	20	8.47	—	44
1995 (6 mos.)	18	20	9.04	—	21
1996 (6 mos.)	12	20	6.02	—	15
1997 (6 mos.)	19	19	9.90	—	25

Detailed Analysis of Recent Personal Injury Trends

Mercer analyzed overall trends in personal injuries in detail for the first quarter of 1995 through the third quarter of 1997. In our analysis, we sought to understand whether there were discernible patterns or trends that might help to explain changes in injury rates. Some of the questions we examined included:

- How has the level of personal injuries varied in each reporting category, i.e., in terms of total injuries, FRA reportable injuries, and lost time injuries?
- Have causal factors for injuries changed over time?
- Are there any trends in the number and type of injuries by department?
- Can the level of injury be related to length of work experience?

Our assessment of personal injuries along four dimensions is presented below.

Assessment of Personal Injuries In Each Reporting Category

Mercer found that injuries at ARRC have trended upward in all three personal injury reporting categories, although the jump in lost time incidents was not as large as FRA reportable and total incidents during the second and third quarters of 1997 (see Exhibit III-5). Personal injury

numbers in all three categories did not really start to climb until sometime during the second quarter of 1996. The relatively low numbers for 1995 were a result of the Mechanical Department's excellent safety performance during that year.

Exhibits III-6 through III-8 present the reporting for each of the three measures by quarter, with a projected number for the fourth quarter of 1997. Changes in the number and seriousness of injuries since mid-1996 are particularly evident when looked at this way.

Exhibit III-5
Breakdown of Employee Injuries by Measure
(1Q95 through 3Q97)

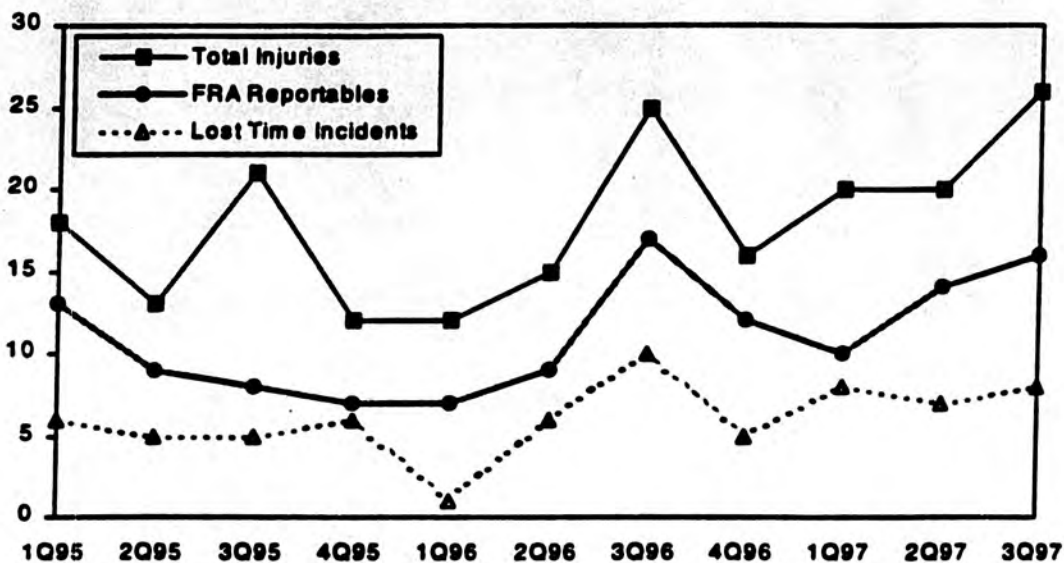


Exhibit III-6
Total Employee Injuries by Quarter
(1Q95 through 3Q97)

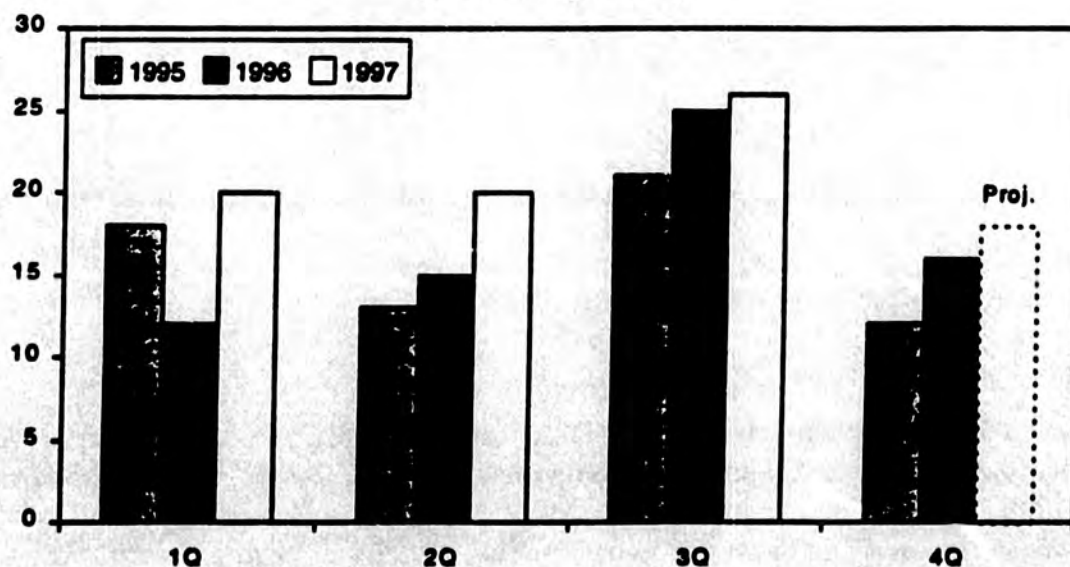


Exhibit III-7
FRA Employee Injuries by Quarter
 (1Q95 through 3Q97)

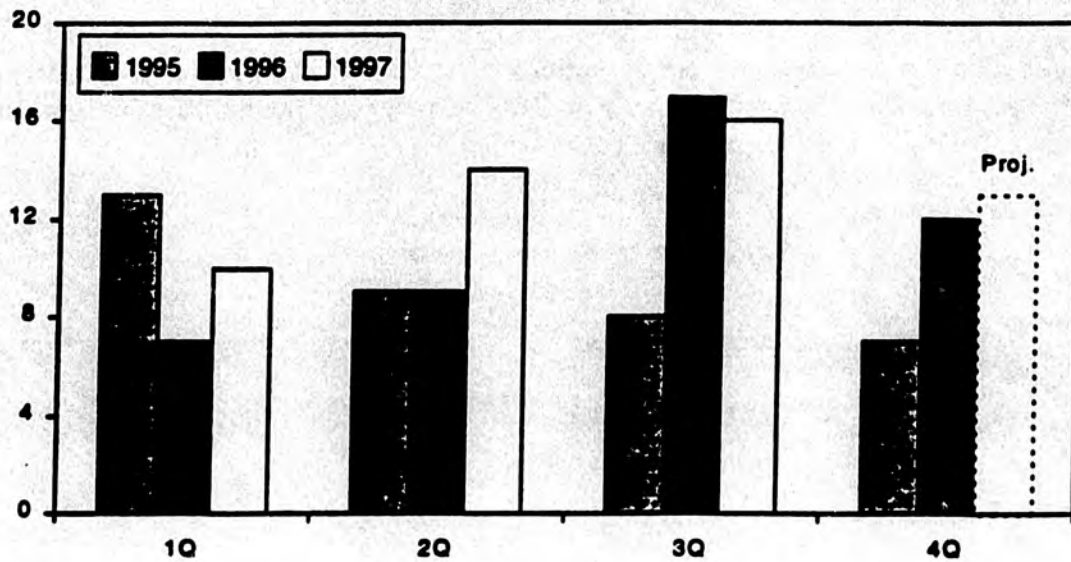
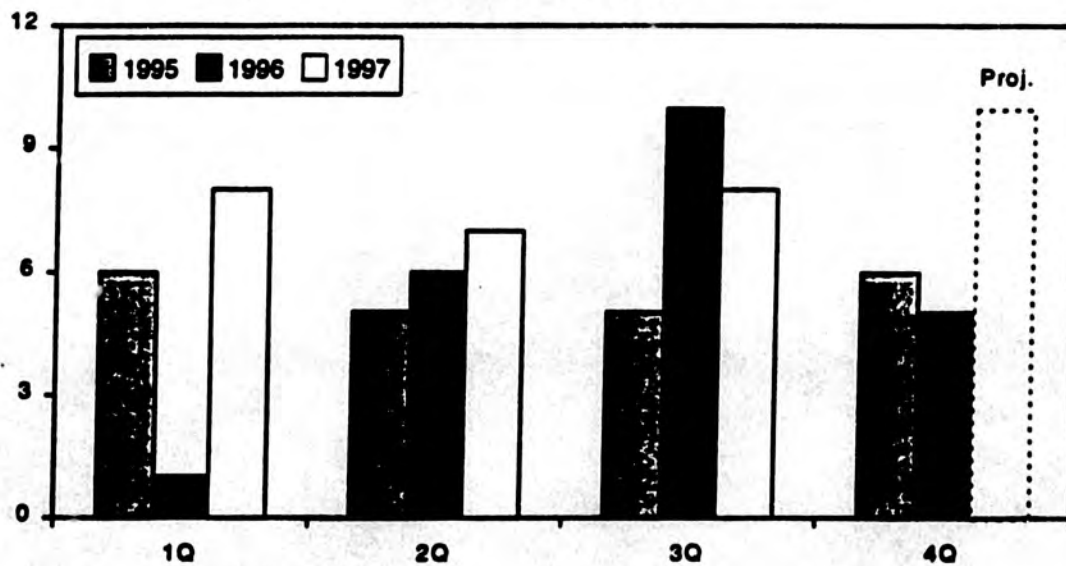


Exhibit III-8
Lost Time Employee Injuries by Quarter
 (1Q95 through 3Q97)



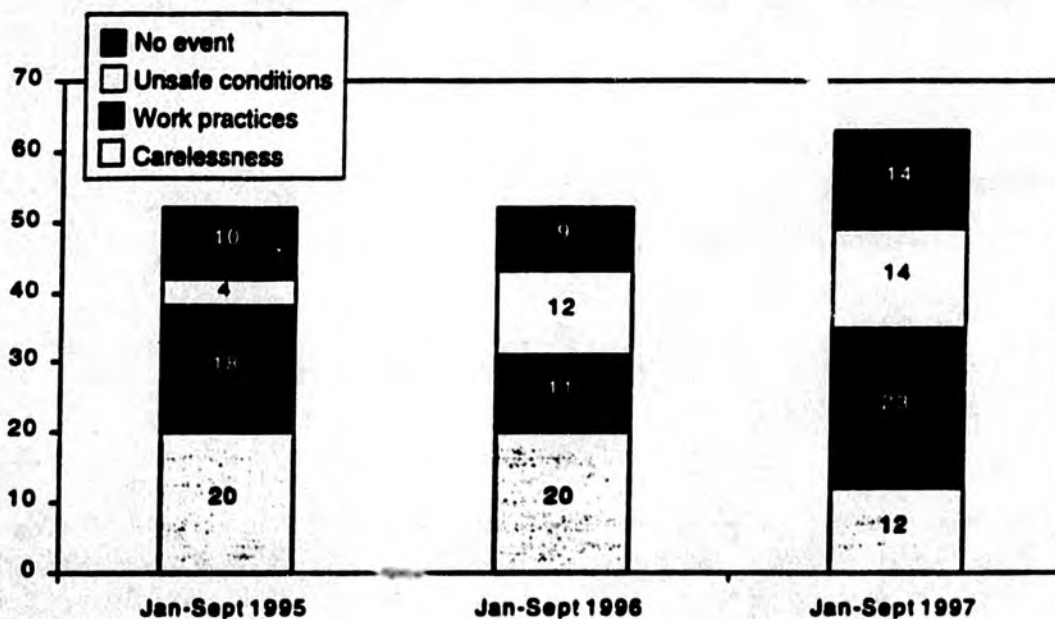
Primary Causal Factors for Personal Injuries

As discussed above, Mercer divided causal factors for injuries into four categories: carelessness, work practices, unsafe conditions, and non-events. We found that for the first nine months of 1995, 1996, and 1997, those personal injuries attributed to carelessness on the part of the employee declined, while those due to a non-event (usually involving an employee with a pre-

existing physical condition) increased. These trends are evident in Exhibits III-9 and III-10, which provide a breakdown of total and lost time personal injury incidents classified by cause.

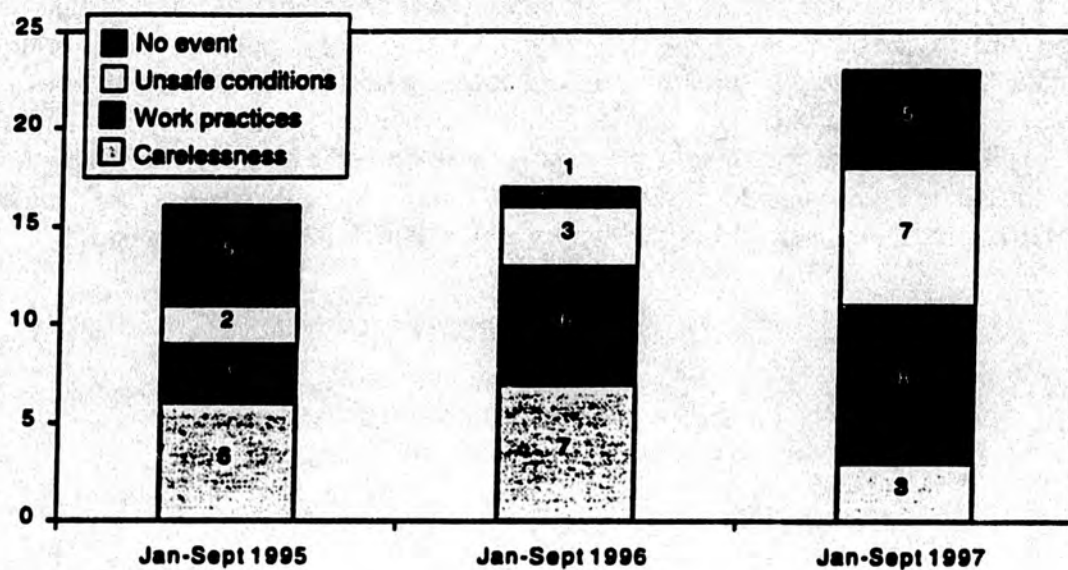
Mercer also finds troublesome a significant increase in the number of injuries due to work practices and unsafe conditions. We believe that a number of incidents related to these factors could have been prevented by the railroad. As shown in Exhibit III-11, lost time days attributable to unsafe conditions in particular have increased tremendously, which points to a need for ARRC to be more diligent and responsive to problem areas on a timely basis. Most of the lost time days due to unsafe conditions in 1997 were the result of slips, trips, or falls due to wet floors or steps, ice in an authorized walkway, or depressions in the ground.

Exhibit III-9
Analysis of Total Incidents by Cause
(first nine months of each year, 1995-1997)



Preventable Incidents			
Unsafe conditions	2	8	8
Work practices	5	1	2

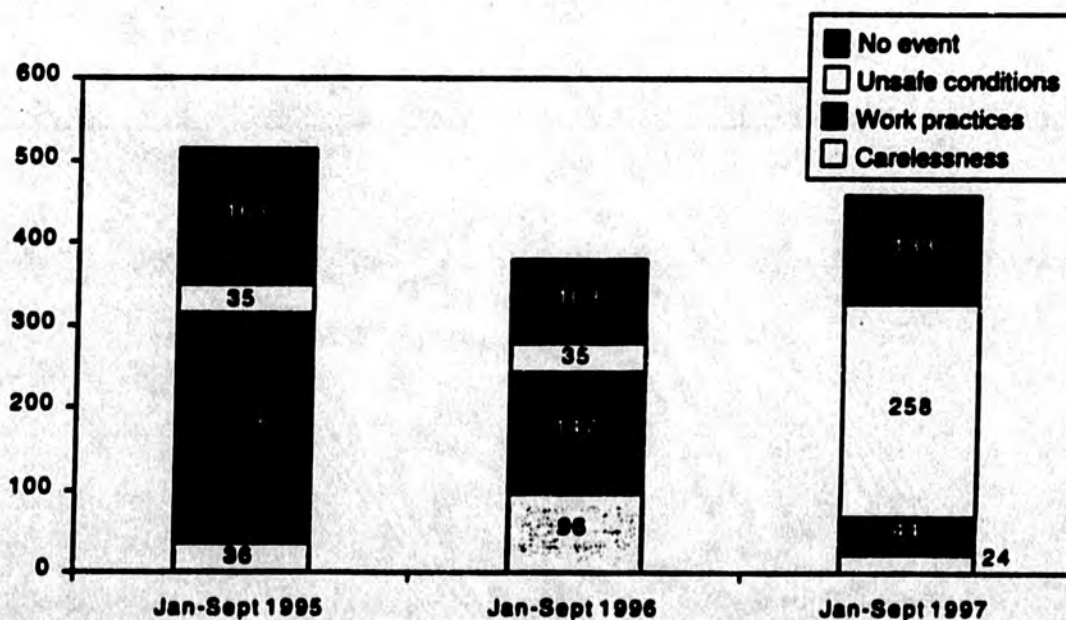
Exhibit III-10
Lost Time Incidents by Cause
 (first nine months of each year, 1995-1997)



Preventable Incidents

Unsafe conditions	-	2	4
Work practices	1	1	-

Exhibit III-11
Lost Time Days by Cause
 (first nine months of each year, 1995-1997)



Personal Injuries by Department

Mercer assessed how injuries have varied by department over the past three years and found some interesting trends:

- **The Passenger Department has experienced a particularly alarming increase in injuries, especially in view of the small size of this department relative to the operating departments (see Exhibits III-12 and III-13).**
- **The Engineering Department's incident rate has markedly improved; this is even more notable in light of the major track rehabilitation programs undertaken by the department in 1996 and 1997.**
- **The Mechanical Department, on the other hand, after an excellent showing in 1995, has seen its incidents rise in 1996-1997.**
- **Transportation is also showing an increased level of total incidents in 1997.**

When serious employee injuries are assessed by department (in terms of number of lost time incidents and total lost time days), it is apparent that the Transportation Department has experienced a tremendous increase in serious injuries. Although the Passenger Department's level of total injuries increased this year, these incidents for the most part have not resulted in lost days. Both Mechanical and Engineering, on the other hand, show a reduction in serious incidents for 1997. These trends translate into a decline in total average days lost per incident overall. See Exhibits III-14 through III-16.

Exhibit III-12
Total Employee Injuries by Department
 (1Q95 through 3Q97)

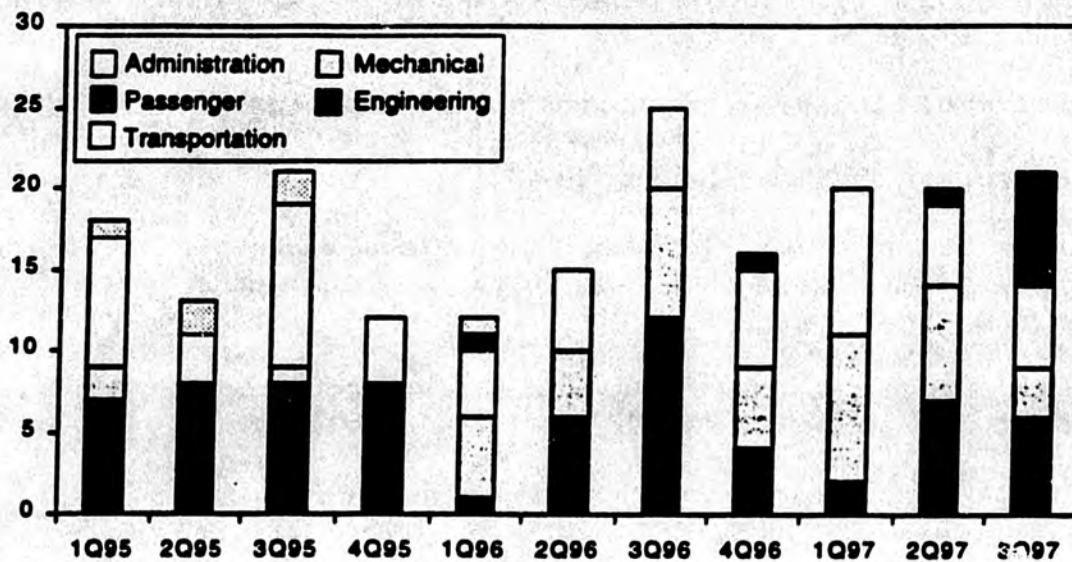


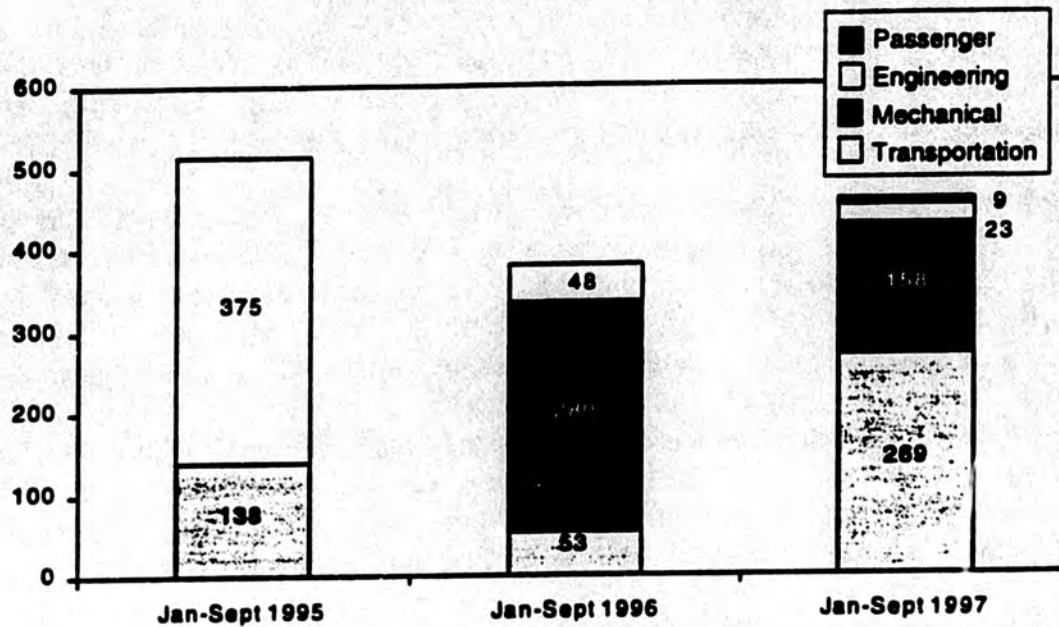
Exhibit III-13
Total Incidents by Department
 (First nine months of each year, 1995-1997)

Department	First Nine Months			Trend
	1995	1996	1997	
Passenger	0	1	8	↑
Administration	5	1	0	↓
Transportation	21	14	21	↑
Mechanical	3	17	19	↑
Engineering	23	19	15	↓

Exhibit III-14
Lost Time Incidents by Department
 (First nine months of each year, 1995-1997)

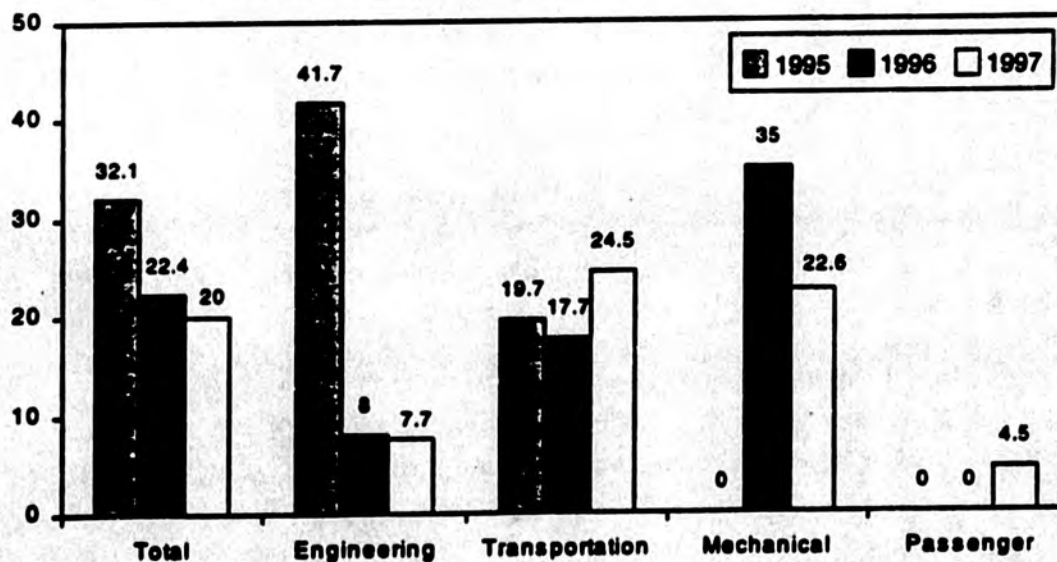
Department	First Nine Months			Trend
	1995	1996	1997	
Passenger	0	0	2	↑
Administration	0	0	0	-
Transportation	7	3	11	↑
Mechanical	0	8	7	↓
Engineering	9	6	3	↓

**Exhibit III-15
Lost Time Days by Department**



Note: Administration had no lost time days in this period; Passenger had no lost time days in 1995-1996; Mechanical had no lost time days in 1995.

**Exhibit III-16
Average Days Lost per Lost Time Incident**



Personal Injuries by Length of Experience

Mercer looked at length of work experience to see if there was some relationship between injury rates and how long an employee had been on the job. We divided employees into "new" employees (those with two years or less of work experience at ARRC) and all other employees (more than two years of work experience).

Surprisingly, we found a most significant development regarding the number of personal injuries involving employees with less than two years of service during the third quarter of 1997 (see Exhibit III-17). From mid-June to the end of August this year (only 2 ½ months), 16 out of 22, or nearly three-fourths of all incidents, were incurred by a "new" employee. This is certainly a "new" phenomenon! Eight of the new employees who experienced injuries appear to have had some type of pre-existing physical condition, which could well have contributed to the occurrence of their injuries or may have been the sole cause. Of the 10 injuries attributable to work practices and the 4 assigned to no event, 9 injuries appeared related to a physical condition of the employee that greatly increased his/her risk (see Exhibit-18). These "physical condition" incidents point to a serious lack of adequate screening during the hiring process.

When new employee incidents are looked at by department, they appear to be relatively well dispersed among the three operating departments and the Passenger Department (see Exhibit III-19). However, the ratio of incidents experienced by new employees in the Passenger Department was much higher than for the operating departments, if one considers the much smaller relative size of the Passenger Department. Surprisingly, the Engineering Department, which had the most new employees in 1996 and 1997, had an injury rate for these employees close to that of the other three departments in 1997.

As shown in the right-hand box of Exhibit III-19, there was a significant jump in the third quarter in injuries to new employees. The Transportation, Engineering, and Passenger groups were primarily responsible for this increase.

Exhibit III-19 also shows the number of personal injuries in each department for all remaining employees over the three-year period. It is interesting to note that total incidents for "experienced" employees (those with more than two years of service) have actually been trending downward.

In summary, length of employment is a major factor in ARRC's recent increase in personal injuries. As shown in Exhibit III-20, all of the increase from 1995 to 1997 occurred among new hires. For all other employees, three fewer incidents are actually expected in 1997 than occurred in 1995.

Exhibit III-17
Employee Injuries by Length of Service
 (1Q95 through 3Q97)

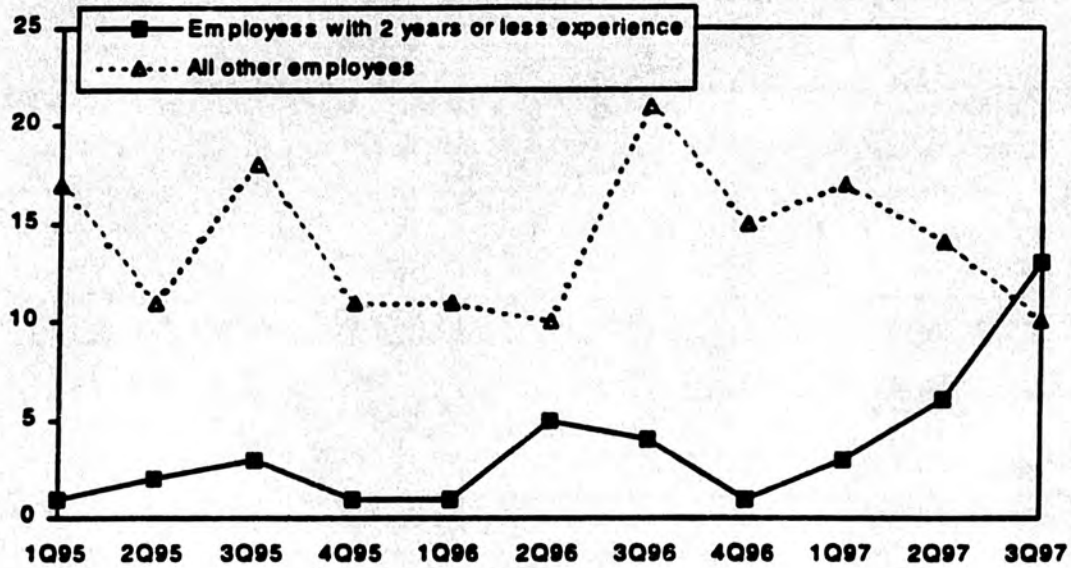


Exhibit III-18
Total Incidents by Cause for Employees With Two Years or Less of Service
 (1Q95 through 3Q97)

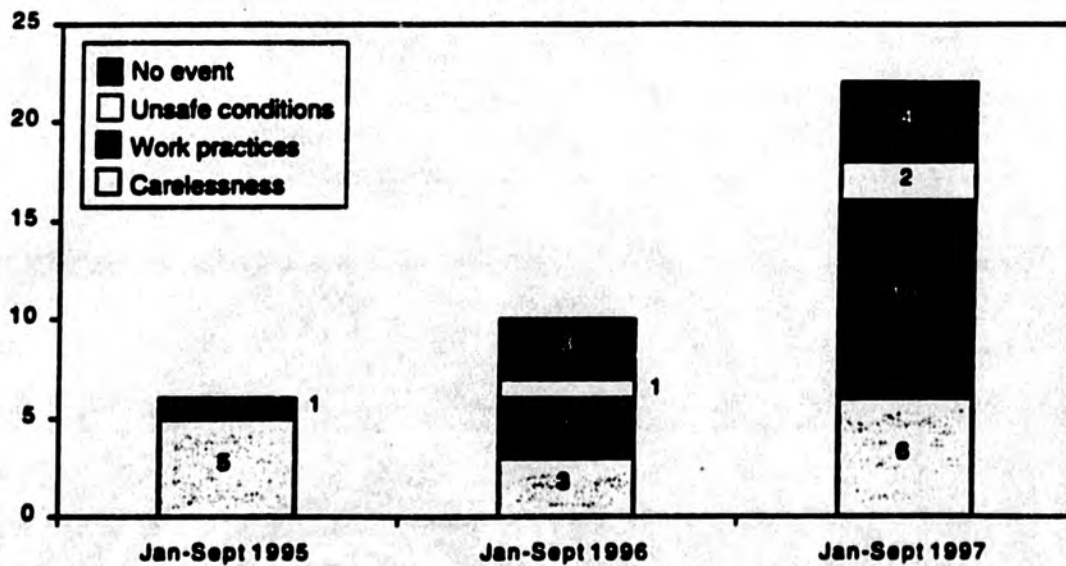


Exhibit III-19
Total Incidents by Department and Length of Service

Two Years or Less Service

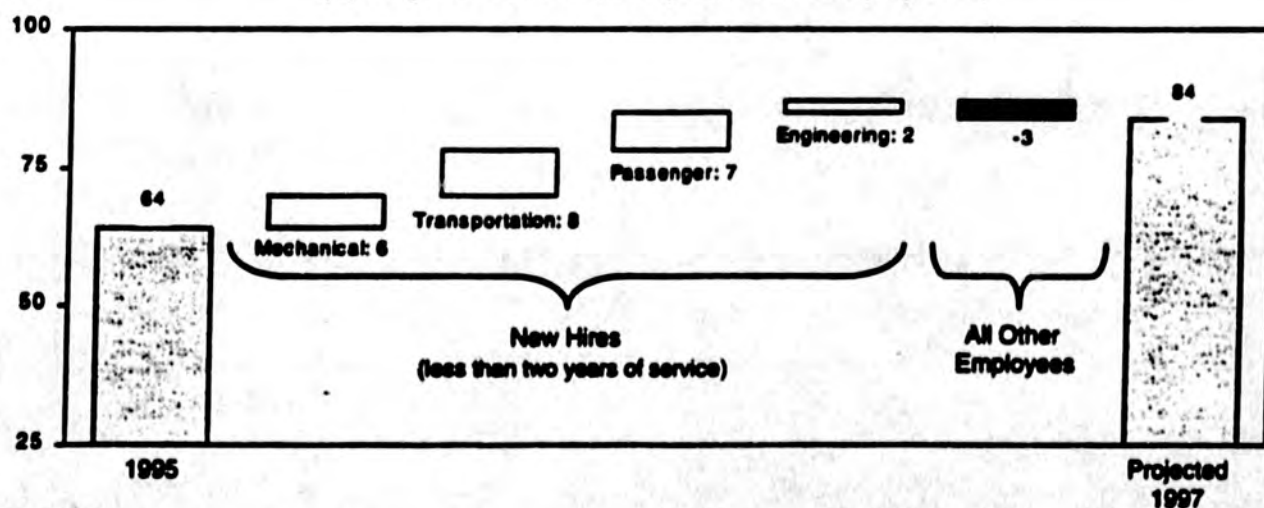
Department	First Nine Months		
	1995	1996	1997
Passenger	0	0	5
Administration	1	1	0
Transportation	0	1	6
Mechanical	1	1	5
Engineering	4	7	6
Total	6	10	22

1997		
1Q	2Q	3Q
0	1	4
0	0	0
1	1	4
2	2	1
0	2	4
3	6	13

More Than Two Years Service

Department	First Nine Months		
	1995	1996	1997
Passenger	0	1	3
Administration	4	0	0
Transportation	21	13	15
Mechanical	2	16	14
Engineering	19	12	9
Total	46	42	41

Exhibit III-20
Change in Total Incidents for 1995 versus 1997
 (by length of service and department, 1997 projected)



Mercer's Evaluation of ARRC's Safety Record

Based on Mercer's evaluation of total and lost time injuries and worker's compensation payments, there is room for improvement in ARRC's safety record. It is clear that such improvement is possible, based on the lower levels of injuries sustained by employees prior to 1996, as well as the lower rates sustained by ARRC's peers.

In terms of achieving an overall reduction in the number of injuries, determining exactly "what went wrong" can be complicated and frustrating, as the concept of safety involves many complex and interrelated factors. Our assessment focused on three areas that generally impact a railroad's safety and personal injury prevention record:

- Whether there are inherently unsafe conditions and practices in evidence at the railroad
- Whether safety administration and injury prevention programs (including screening, orientation, training, review, and monitoring) are adequate and properly administered
- Whether employee and management attitudes are having an impact on the level of injuries

Inherent Safety of Railroad Conditions and Work Practices

From a physical standpoint, the railroad appears to provide a safe place to work for those areas within ARRC's control. A review of the type of injuries incurred from 1995-1997 generally confirms this. The several injuries that did involve unsafe conditions appear due to wet floors and steps and icy conditions.

The railroad also appears to be following through on correcting problem areas that have been reported by employees. The most apparent deficiency in the railroad's efforts to correct such problems is the lack of a formal procedure for response and remediation once an unsafe condition or practice has been reported. Although well-defined instructions exist for reporting a problem, there appears to be no process in place to:

- Acknowledge receipt of information provided by a employee
- Provide a follow-up report (within a specific time frame) that explains the status and/or action taken

Mercer also found some evidence of injuries resulting from improper work practices. It appears that these work practices are condoned by management. In some cases, improper tools and equipment were used, sometimes as a shortcut, sometimes because "we've always done it that way." A process to review and monitor work practices to ensure compliance with proper methods and procedures appears to be lacking.

Safety Administration and Injury Prevention Programs

Administration of Safety Programs: Mercer assessed the Safety Manager's roles and responsibilities (see Exhibit III-21) and evaluated the effectiveness of safety management based on the following factors:

- The ability of the Safety Manager to act in the capacity of a neutral, independent inspector and observer in the workplace, for the purpose of detecting unsafe work practices, conditions, and employee activities and then handling any problem areas with the appropriate operating personnel.
- The quality of the relationship between the Safety Manager and the operating departments, which are essentially his customers; whether he makes himself available to assist them in their personal injury prevention activities and acts in a sensitive manner when matters involve sharing responsibility with the line department managers.
- The effective use of information from a safety database to identify aberrations, trends, etc. and to refine or customize safety programs to address problem areas.

Exhibit III-21

Responsibilities of the Health and Safety Manager

Safety programs	Work with the operating departments to plan, develop, and implement
Safety training programs	Oversee development and presentation
Safety inspections	Inspect the workplace environment regularly for all aspects of ARRC operation and handle safety concerns for correction as appropriate
Emergency response plans	Participate in development, implementation, and evaluation
Reporting	Keep the CEO fully informed of the overall safety situation on the railroad and advise the CEO on matters involving safety
Other support	Provide technical support on safety standards and other administrative support as required

The current Health and Safety Manager appears to be fulfilling his responsibilities in general, including participating in the implementation of a wide variety of safety programs. His effectiveness, however, has been stymied by ARRC's failure to fully identify what his role should be within the organization. In addition to this lack of a defined role, Mercer identified the following as the most serious deficiencies in the management of health and safety at ARRC:

- The relationship of the Safety Manager and the operating department managers is poorly defined and ripe for potential conflict. The duties and responsibilities of the Manager overlap that of the line managers, with the Safety Manager acting as an overseer rather than as an advisor.

- The duties of the Safety Manager require a high level of diplomacy and patience and the establishment of good relationships with line departments. Interviews indicated that for the most part, the line departments consider the Safety Manager to be more of a critic of their operations and a policeman overseeing their activities rather than an ally in the effort to reduce personal injuries.
- The reporting and investigation of personal injuries is inadequate (see further discussion below).
- The data that are collected on the underlying reasons for personal injuries are sparse. There is no uniform database available for performing detailed analyses of trends and changes in the number and type of personal injuries.

Safety programs: ARRC probably has had more diverse safety programs in recent years than most railroads its size. It is Mercer's impression that the various types of safety meetings, committees, outside assistance, and focused activities that have been used should have contributed considerably to a good safety culture. Although Mercer is not able to evaluate the effectiveness of these efforts (as we are not in a position to measure employees' responses), it appears that, on the basis of the rise in personal injuries, the safety culture is not benefiting from these programs.

Mercer did observe that certain safety rules are not consistently being complied with or are being overlooked by supervisors; in particular, safety rules related to proper protective gear (clothing, eyewear, hard hats, footwear, etc.) This is of concern, as first line supervisors are key in ensuring that safety programs and rules are followed. If first line supervisors do not fully embrace safety programs or don't practice safety initiatives on a day-to-day basis, employees will soon detect the lack of interest and develop a lax or negative attitude toward safety programs. If supervisors condone the violation of a safety rule or don't enforce compliance, the importance of the rule is diminished and employees may be confused as to its applicability.

New employee selection and training: ARRC appears to lack an aggressive and effective selection and training program for new employees. The high level of injuries among new employees at the railroad particularly demonstrates the importance of having a focused program to prepare new employees to do their jobs in an acceptably safe manner. Also lacking is a follow-up program to oversee and monitor new employees' progress.

Training for experienced employees: Mercer found that training for experienced employees at the railroad is also lacking. Training for more experienced employees fulfills a number of functions: it reinforces earlier training, helps employees maintain a heightened awareness about safety, and ensures employees are up to date on the latest safety information and problem areas. Continued safety training and reinforcement of the railroad's safety philosophy also demonstrate management's commitment to safety and concern for workers' well being, thus helping to create a bond of trust and confidence between employees and management and possibly improving employee morale.

Management safety training: First-line supervisors and middle managers also require safety training. They need to know how to carry out the railroad's safety policies

effectively, including the fundamentals for dealing with subordinates on safety issues. Far too often, supervisors and managers are promoted from the ranks with little or no training in this area.

Apparently, the formal training program and the position of training manager were discontinued several years ago. We are gratified to learn that training sessions are scheduled this fall for 20 non-agreement first line supervisors; continuing and expanding this training for all levels of management would be worth considering. We also understand that the Health and Safety Manager is developing a program related to repetitive motion and carpal tunnel syndrome injuries.

Reporting and investigation: Mercer found some deficiencies in ARRC's personal injury reporting and investigation process. We consider such a process to be one of the most important elements of an effective personal injury prevention program. A proper procedure would address the following:

- An accurate initial report containing all of the pertinent information available at the time
- A comprehensive investigation that would be conducted by the supervisor, including causal factors and what might have been done to prevent the injury
- A close-out report assigning a definitive cause and the steps taken to prevent a recurrence, if any.

When a derailment occurs, there is usually a significant effort made to determine a definitive cause so measures can be taken to prevent a recurrence. Personal injuries are no different and should be treated in the same manner.

Mercer received copies of all documents in the possession of the Health and Safety Manager for injuries that occurred between January 1, 1995, and September 30, 1997. It was disappointing to find that a preponderance of the reports did not go beyond the initial reports submitted by the supervisor. The following critical information was missing in many of the reports:

- Cause of the incident
- What might have prevented the incident
- What steps were taken to prevent a recurrence
- Whether there was a pre-existing physical condition that might have been a factor
- Whether proper procedures were followed
- Whether proper tools and appliances were used
- If an inspection was made of the implement used, such as switch, hand brake, vehicle brake, etc.

- Whether there were any extenuating circumstances, such as the weight of the individual
- If any disciplinary action was taken
- If protective gear such as safety glasses, footwear, gloves, knee pads, etc. was used or available

With all of the instruction, training, and other efforts ARRC has undertaken to prevent injuries over the past several years, it is difficult to accept the poor quality of information available. The lack of critical information represents a significant gap in proper investigation procedures. Mercer can only assume that since reports do not contain complete information, they are either not being reviewed by department heads or there is a lack of interest in following up to obtain more complete information on incidents. Or, perhaps subsequent documentation is not being provided to the Health and Safety Manager.

There has been some improvement since new FRA forms came into use this year, but much more needs to be done in this area if a comprehensive and useful database of incidents is to be maintained. Since departments average only about 2 or 3 incidents a month, a complete investigation and close-out report would not represent a significant increase in work. Thorough reporting could, however, help reduce overall injuries if more were known about the causes and circumstances of each incident.

Management and Employee Attitudes on Safety

The safety record of any organization is subject to a key intangible: the attitudes of employees. This is particularly the case for a railroad, where exposure to potential injury is inherent in the business. Current social standards, which have tended to shift the responsibility for injury prevention from employees to management, has made the issue of employees' attitudes and expectations in regard to safety more important than ever. Management's response must be to provide better leadership, clearly defining expectations for employees in regard to their job functions and their responsibilities for safety. If safety is indeed the "most important element in performing duties" as stated in the Safety Manual, all levels of management – from the CEO on down – must provide consistent focus and direction in ensuring a safe operation.

Mercer found several factors have contributed to weaken management's leadership in setting expectations about safety:

- Key changes in top management positions over the past six years have interrupted and continue to affect the consistency of personal injury prevention efforts, as the priority given to safety is to some extent based on the interest level of each "new" manager. These changes also disrupt the relationships between management and employees that usually help reinforce attitudes and perceptions about safety.
- The changes in top management, combined with a lack of sufficient recognition and support, may be affecting middle and first-line managers' abilities and motivation to adequately carry out their personal injury prevention responsibilities. Mercer believes

there may be some confusion among middle and line managers regarding the goals and objectives of the railroad and the amount of support they can expect to receive in resolving disciplinary and personal injury issues.

- Management does not appear to have a clear understanding regarding the extent and causes of personal injuries at the railroad. Without knowing where and when incidents are occurring (e.g., which departments are most affected, whether less experienced employees have more injuries), it is difficult to develop appropriate solutions. None of the managers Mercer interviewed had a ready explanation for the increased number of personal injuries.
- Management has been unable to clearly define employees' responsibility for their own safety. For example, most of the management staff appear to share the opinion that employees do not accept responsibility when an injury is solely the fault of the individual. By comparison, when employees were asked in the "Perception" survey (conducted by Northwest Safety Management, Inc.) if they were held accountable for actions that impact the safety of their work areas, *all* of those questioned said "yes." In fact, the results of the survey disclosed a rather large gap between the railroad's objectives and employees' perceptions of those objectives.

Mercer also found that poor employee morale could be contributing to the safety problem. In each of the years Mercer has conducted its audit, the question of low morale, poor employee attitudes, and distrust of management has often been mentioned in connection with personal injury discussions. This concern seemed most prevalent in mid-1996, at the height of labor negotiations. Since then a number of factors that contribute to employee morale have gotten better – including settlement of labor issues and improvements at the railroad – so it is disturbing to find that poor morale continues to be an issue.

Some factors that may be contributing to this morale problem include a lack of communication and poor management-employee relationships, with employees as a result feeling less invested in the railroad. Staffing reductions in past years may also be contributing to the situation, as the remaining employees have had to deal with changing job requirements and new responsibilities.

The most direct evidence of the impact of poor morale is an increase in those injuries that are beyond the railroad's ability to control, i.e., injuries that cannot be attributed to specific events or that may be linked to an employee's pre-existing physical condition. In the first nine months of 1997, for example, almost 50 percent of total incidents were of these types (15 incidents were not event specific and another 14 were due to a physical condition complaint, such as back pain, etc.). The level of injuries in these two categories can be difficult for a railroad to manage, because:

- The recognition of what constitutes an injury has changed to include not only acute injuries that result from specific events (broken bones, cuts, bruises, etc.) but also unspecified or chronic conditions that surface or are aggravated when an employee is working.

- Legislation and changed attitudes have made it more difficult for employers to consider the physical limitations of an employee; the burden is now on the employer to prove that a physical condition disqualifies an individual for specific work.
- It has become somewhat more acceptable in society to claim an injury at work when it is not entirely certain that the injury was the responsibility of the employer or was actually related to work on the railroad.
- Poor morale can lead to a general attitude of indifference among employees and the loss of accompanying peer pressure to "play by the rules," thus opening the door to many incidents that would either not have happened or that were actually due to activities performed away from work.

Review of Proposed Locomotive Acquisition

Overview

ARRC plans to take the unprecedented step of replacing a large portion of its relatively old locomotive fleet with new state-of-the art locomotives. This move will both simplify and rejuvenate ARRC's fleet, which will shrink from 50 locomotives of six different types to 30 locomotives of just three types. The new fleet will include 16 technologically advanced SD70MAC six-axle AC locomotives, 10 rebuilt or recently overhauled four-axle GP38s, and 4 MP15 switch engines. The new SD70s will be the workhorses of the fleet and will be used on the key long distance trains that account for two-thirds of the train trips operated annually by ARRC (see Exhibit III-22).

The benefits of this replacement plan are expected to flow through all phases of railroad operations. The following are the primary benefits specifically projected by management:

- Upgrade the overall quality of the fleet to ensure higher levels of reliability under the harsh operating conditions faced by ARRC
- Reduce the basic costs of locomotive maintenance, since
 - The size of the fleet will be reduced and standardized around a few locomotive types
 - High-maintenance locomotives will be replaced with locomotives that are inherently less costly to maintain
 - The total miles of locomotive use will be substantially lowered, since fewer of the more powerful SD70MACs will be needed per train
- Reduce the costs of inventory and facility assets required to support the locomotive fleet, by reducing spare parts inventory needs and eliminating obsolete maintenance facilities
- Lower other operating costs such as fuel and sand use

Exhibit III-22
Summary of ARRC Train Trip to Be Powered by SD70MACs
 (based on 1996 train trips)

Train No.	Direction	Name	Total Annual Trips	Trips to Be Powered by SD70MACs
Freight				
110	N	Sew-Anch Frt	31	-
110	S	Anch-Sew Frt	32	-
118	N	Port-Anch Frt	1	-
118	S	Anch-Port Frt	1	-
120	N	Whitt-Anch Frt	161	-
120	S	Anch-Whitt Frt	158	-
130	N	Anch-Fbx MAPCO	363	363
130	S	Fbx-Anch MAPCO	366	366
135	N	Anch-Fbx FOX	130	130
135	S	Fbx-Anch FOX	122	122
140	I	Palmer Turn	27	-
150	I	Gravel-AGG	61	61
155	I	Gravel-AS&G	123	123
157	I	Gravel-CPP	109	109
175	I	Nenana Turn	1	-
175	N	Nenana-Fbx	1	-
175	S	Fbx-Nenana	2	-
181	I	SUNEEL	119	119
183	I	SUNEEL	119	119
188	I	North Coal	134	134
188	N	North Coal	7	7
190	N	Other Nth Frt	18	-
190	S	Other Sth Frt	22	-
191	I	Other Turns	21	-
191	N	Other Nth Frt	1	-
191	S	Other Sth Frt	1	-
Passenger				
210	I	Seward	114	-
220	I	Shuttle	269	-
230	N	Nth Express	158	158
230	S	Sth Express	160	160
240	I	Hurricane	64	-
290	I	Misc.	46	-
290	N	Misc.	11	-
290	S	Misc.	10	-
Total			2,963	1,971
SD70MAC Trains as % of Total				66.5%

Source: ARRC 1996 train performance statistics, prepared by Bruce Carr.

- Improve locomotive utilization, as the high reliability of the new locomotives plus their overall increased availability will permit faster turnaround times between runs

Since the proposed acquisition will result in a smaller and easier-to-maintain fleet, management anticipates that the railroad's locomotive maintenance facilities can be substantially modified in the future. The facilities currently have more capacity than needed to maintain the existing fleet and are old, obsolete, and inefficient compared to modern facilities.

ARRC also studied the impact of the locomotives on the track structure and concluded that because of the radial trucks, the impact would be negligible. In fact, less rail wear is anticipated due to the improved tracking of the SD70 trucks. The only major track changes required will be additional rail anchors.

Mercer's Assessment of Proposed Acquisition

Mercer is aware of no other railroad of ARRC's size that has replaced such a large portion of its fleet with new locomotives. Other than its original conversion from steam to diesel locomotives and the 1950s rail replacement program, this is the largest capital program ever undertaken by ARRC.

The decision to replace a large part of the fleet was in part influenced by the need to make a long-term change in the total cost of doing business. Over the past several years, ARRC has struggled to improve its productivity and lower its costs in order to be more competitive in the transportation marketplace. The high costs of operating and maintaining an aging locomotive fleet was an obvious target, as new locomotive technology offers many cost benefits not previously available.

In Mercer's view, ARRC's fleet replacement plan will impact nearly every facet of rail operations. The economics projected by management are for the most part limited to lowering maintenance costs, but in our opinion the ability to improve train operations and to rationalize maintenance facilities will yield large additional benefits that have yet to be quantified.

Our assessment examined the following aspects of the fleet replacement plan:

- Rationale for fleet replacement
- Pulling power of the smaller fleet
- Impact on reliability and availability
- Impact on locomotive maintenance costs
- Impact on maintenance facility requirements
- Alternative locomotive maintenance and financing options
- Impact on inventory costs

- Use of SD70MACs on passenger trains
- Impact on track

Rationale for Fleet Replacement

The decision and rationale for the purchase of the new locomotives appears to be sound. The costs to maintain the current fleet have risen by 43 percent in the past six years, from \$3.0 million in 1990 to \$4.4 million in 1996, while other ARRC operating costs declined by 12 percent. This trend is only expected to worsen, since some maintenance has been deferred and the railroad will eventually have to deal with this. In particular, ARRC has done fewer overhauls than it should have and the overhauls completed have been of a lower quality than is usually recognized as sufficient in the industry.

The railroad could attempt to upgrade the current fleet on its own, but doing so could take many years. The railroad would also be handicapped by using locomotives that could not be upgraded at an economical cost with the newest technology; ultimately, ARRC would be relying on obsolete assets.

Pulling Power of the Smaller Fleet

While the plan calls for a substantial reduction in the number of units operated by ARRC, the effective pulling power of the new fleet should be equal to that of the current fleet. The plan projects a 40 percent reduction in the number of locomotives, from 50 units to 30 (excluding MP15 switch engines, road haul locomotives will be reduced from 46 to 26). The horsepower of the road haul locomotives will decline by 31 percent, from 127,250 hp to 84,000 hp, but the fleet will produce the same or more pulling capability (tractive effort) at normal speeds and with higher levels of reliability and availability (see Exhibit III-23).

Test results by the manufacturer and the Association of American Railroads indicate that the traction effort could be as much as 10 percent more than that expected by ARRC; if this is the case, the total tractive effort of the road haul fleet could increase by 5 percent or more than current tractive effort.

Impact on Reliability and Availability

The new fleet should ensure a high degree of reliability. It is true that the railroad has made great progress in recent years in improving reliability and it is estimated that the fleet experiences less than one failure per locomotive per year; this compares well with industry standards. This performance, however, comes at a relatively high cost and, as noted above (and mentioned in prior audits), ARRC's locomotive maintenance cost per unit-mile is high. The new locomotives have a high level of reliability incorporated into their design and recent full service agreements between the manufacturers and railroads have called for 95 percent reliability in over-the-road operations.

Management acknowledges that the availability of the new locomotives will be far superior to that of the present fleet due to their larger fuel tanks, greater cold weather adaptability, and greater reliability. Management, however, does not show any improved utilization from this advantage, except to the extent that the new MAPCO oil train will be expanded without any further locomotive acquisitions. With the increased availability of the new fleet, there should be other opportunities to use the SD70MACs even more efficiently to cover trains otherwise scheduled to be pulled by the GP38s.

Exhibit III-23
Planned Changes in Tractive Effort for Road Haul Fleet
 (current numbers for 1997)

Locomotive Type	Number in Fleet		Tractive Effort (lbs)	
	Current	Projected	Current	Projected
GP38-2	8	10	482,000	614,000
GP9	1	0	52,500	—
GP35	3	0	186,720	—
GP40-2	19	0	1,235,000	—
GP49	9	0	607,500	—
Leased ¹	6	0	195,000	—
SD70MAC ²	0	16	—	2,400,000
Total	46	26	2,758,720	3,014,000

¹ Leased locomotive tractive effort is calculated at 65,000 pounds of force per unit for six months per year.

² Mercer assumed 36% adhesion, 150,000 pounds per unit, which is within the adhesion rate claimed by the manufacturer. An even more conservative estimate of 30% adhesion, 137,000 pounds per unit, would still result in a total fleet tractive effort of 2,806,000 pounds.

The ARRC should also consider how the new locomotives could be used to reduce waiting time between runs. The new locomotives have the capability for faster turnaround, due to their larger fuel tanks and adaptability to cold weather. At a minimum, they will be available for running the occasional extra train to relieve excess tonnage.

Impact on Future Locomotive Maintenance Costs

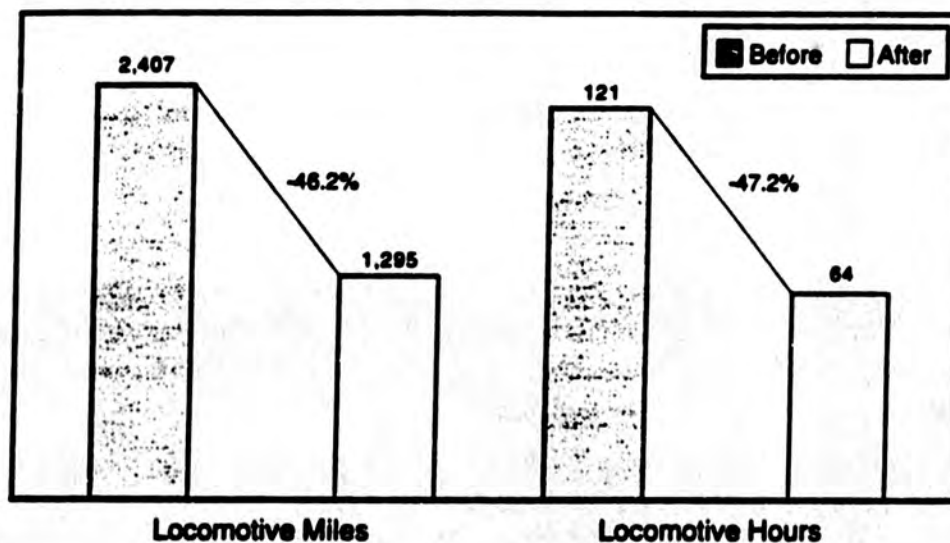
Lower locomotive maintenance costs will be the most important direct economic benefit of the new fleet. These costs will decline in direct proportion to the reduction in miles traveled by the new fleet as compared to the current fleet. Mileage will decline because fewer of the new

SD70MAC locomotives will be required per train, given their higher per unit² horsepower and traction. The average number of locomotives per train will be reduced from 4 to 2.1 units per train. Since the SD70MACs will account for 84.4 percent of total train miles and 94.5 percent of gross ton-miles, locomotive unit miles can be expected to decline by more than 40 percent (see Exhibits III-24 through III-26).

Exhibit III-24
Physical Characteristics of the Locomotive Acquisition

	Trains Slated for SD70MACs	Percent of Total Trains	All Other Trains	Total Trains
GTM's (millions)	2,264	94.5%	131	2,395
Train Miles	605,129	84.4%	111,469	716,598
Avg. Miles Per Train	307		106	237
Avg. Hours Per Train	16.2		10.7	15.2
Avg. Train Speed	19.0		9.9	15.7

Exhibit III-25
Changes in Locomotive Use for Trains Slated for SD70MACs
(miles and hours in 000s)



²The word "units" as used in this context is synonymous with locomotives. The usual officially defined railroad locomotive is one unit, or more than one when operated with interconnecting controls so that all of the individual units can be operated as one locomotive.

Exhibit III-26
Total Impact of Acquisition on Locomotive Miles and Hours

	Trains Slated for SD70MACs	Percent of Total Trains	All Other Trains	Total Trains
Locomotive Miles				
Before	2,406,966	93.2%	175,996	2,582,962
After	1,295,031	88.0%	175,996	1,471,027
% Change	-46.2%		0.0%	-43.0%
Locomotive Hours				
Before	120,883	73.3%	44,102	164,985
After	63,790	59.1%	44,102	107,892
% Change	-47.2%		0.0%	-34.6%

The impact of the new locomotives on ARRC's overall train operating productivity is expected to be impressive (see Exhibits III-27 and III-28). For example, the gross tonnage hauled per locomotive unit-mile will increase by 75.6 percent (to 1,628 tons), bringing ARRC much closer to the productivity achieved by the U.S. Class I railroads (which haul an average of 1,800 tons per locomotive unit-mile). ARRC will accomplish this with an average of only 2.1 locomotive units per train, significantly fewer units than used by the Class Is, which average about 3 locomotives per train.

Exhibit III-27
Productivity Changes for Trains Slated for SD70MACs

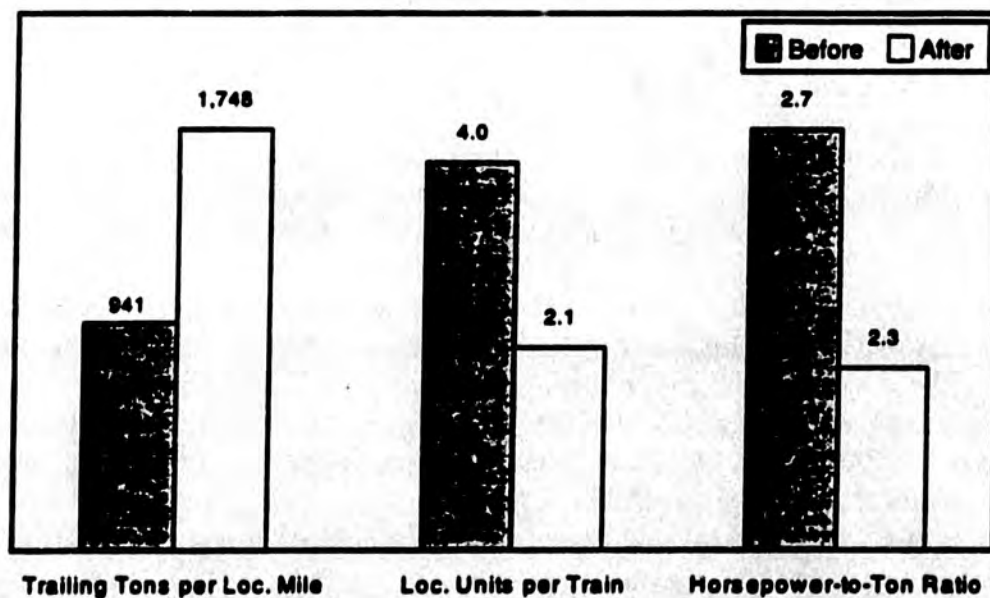


Exhibit III-28

Total Impacts of Acquisition on Productivity

	Trains Slated for SD70MACs	All Other Trains	Total Trains
Trailing Tons per Locomotive Mile			
Before	941	745	927
After	1,748	745	1,628
% Change	85.9%	0.0%	75.6%
Locomotive Units per Train			
Before	4.0	1.6	3.6
After	2.1	1.6	2.1
% Change	-46.2%	0.0%	-43.0%
Horsepower-to-Ton Ratio			
Before	2.7	--	--
After	2.3	2.7	--
% Change	-16.3%	--	--

ARRC should expect to obtain additional savings, as the new locomotives will be less expensive to maintain compared to the current fleet. While the new locomotives require certain minimum inspections as designated by the FRA, they can be expected to require far less frequent repair because of inherent design features:

- The locomotives have fewer major components; for example, solid-state electronics have replaced complicated electrical apparatus (including contractors and relays)
- On-board modern diagnostic equipment is standard, thus enabling quick identification of problems and resolution with minimal time and effort
- Components are longer lasting; for example, the AC traction motors do not have carbon brushes and the overall inherent design provides for twice the life as DC motors, wheel life is double, and the diesel engine has longer life components as well

Maintenance costs will also be minimized because the new locomotives are covered by a warranty that will cover all major work and some miscellaneous problems for the life of the warranty. The only work not covered would be problems due to the railroad's negligence and normal servicing and inspection (including FRA required inspections and other usual requirements, it is estimated that servicing and inspection work represent about 20 percent of the current budget). The costs for the routine inspections to meet industry standards also will be lower, as daily trip inspections will be done by the locomotive engineer. This change should reduce inspection costs by a significant amount.

In addition to the cost reductions noted above, the reduction in the number and types of locomotives will obviously have a substantial impact on costs. In particular, the reduction of locomotive types will allow for greater standardization of components and work procedures.

Another key element in support of the cost of purchasing the new locomotives will be the much smaller workforce required for locomotive maintenance and the reduction in associated labor cost.

The only reservations Mercer has on the cost savings anticipated by management are as follows:

- We believe that the costs contained in the pro forma analyses overestimate the costs that ARRC will experience for the first several years. The costs used appear to be based on longer-term experience.
- The costs used for the SD70MACs do not fully reflect the longer service life of the major components; for example, it is assumed that the wheel sets of the SD70s are replaced at the same rate as GP38 wheel sets, while in actuality the SD70 wheel sets should have double the life.
- The costs to maintain the GP38s in the past have been somewhat understated, as materials were drawn from an inventory that was valued at no cost when the railroad was purchased by the state. Future GP38 costs have not been adjusted to include the full cost of materials as inventory is replenished.
- The railroad is planning to raise the status of its GP38 fleet, making the GP38 the only road locomotive type in addition to the SD70MAC and thus will need to ensure that these locomotives maintain a high level of reliability. The railroad, however, has no plans to upgrade this fleet other than to rebuild and convert two GP40 into GP38 type locomotives. In addition, the maintenance costs assumed for the GP38s may not be sufficient to maintain them at the level necessary for the high level of reliability that will be required.

Impact on Maintenance Facility Requirements

Mercer concurs that the program will drastically alter the type and number of facilities needed for locomotive maintenance. ARRC has considerable surplus locomotive facility maintenance capacity already and this will grow to unacceptable levels with the purchase of the new locomotives. The following factors will be important:

- The SD70MACs will require less servicing at facilities, as the daily inspections will be performed by the locomotive engineers and larger fuel tanks will permit less servicing.
- Expected maintenance repairs will occur far less frequently.
- Warrantied repairs to the new locomotives could be performed by the manufacturer at facilities of his choosing; the desire to keep costs to a minimum might lead the manufacturer to perform the work elsewhere. For example, EMD has hired a contractor to do warranty work in the lower 48 states.

A net result of these changes is that ARRC may be placed in the position of being unable to economically repair locomotives according to modern standards, since the volume of

maintenance and repair work will be insufficient to warrant installing modern tooling and to ensure economies of scale in production processes and inventory turnover. Unless it is willing to financially support an increasingly obsolete and underutilized maintenance plant, ARRC will have no choice except to take drastic action in revamping its locomotive maintenance practices.

Alternative Locomotive Maintenance and Financing Options

Management has not fully explored all of its options for financing and maintaining the proposed locomotive fleet. Management did examine several purchase financing arrangements, but did not explore options that many other railroads have considered, such as full-service leasing, financial leveraged leasing, and maintenance under extended warranty. As noted above, ARRC will have difficulty providing its own maintenance at a competitive cost because of its relatively small fleet and the reduced complexity of repairs needed on the smaller fleet.

Impact on Inventory Costs

ARRC currently has a locomotive inventory with a stated value of \$4.5 million plus additional shop floor inventory, all of which will be greatly reduced with the purchase of new locomotives. Additional benefits will include much lower associated materials handling and administrative costs.

Use of SD70s on Passenger Trains

The least beneficial use of the new locomotives will be to use them on the passenger trains. GP38 locomotives are capable of handling passenger trains at 49 mph as well as SD70MAC locomotives. The SD70MACs are really more suitable (in terms of tractive effort per unit) of hauling heavy freight trains.

Impact on Track

The railroad industry has had little experience using SD70MACs or similar locomotives on the type of track structure used by ARRC. Almost all of ARRC's track is jointed rail of 115 pound weight, while the main line rail used by other railroads that have purchased such locomotives is primarily much heavier continuous welded rail (132 pound rail is a common standard). It is therefore difficult to evaluate ARRC's plan on the basis of experience at other railroads. That experience, however, can be partially extrapolated to ARRC's conditions. The following observations of anticipated engineering impacts are based on the experience of the Mercer team plus limited discussions with other railroads and manufacturers:

- The forces exerted on the track structure by the new locomotives when starting on grades and sharp curves could reach unacceptable levels, particularly on angle bars and bolt holes. The railroads contacted by Mercer are sufficiently concerned to add additional anchors, and where they have jointed rail, they use longer 6-hole angle bars.

- From discussions with several major railroads, the general feedback is that the SD70s are easy on the track structure in most respects. The principal problem is on turnouts of number 8 or smaller, where the torque forces of these locomotives can be excessive and cause potential derailments. One of the railroads undertook a detailed stress analysis to determine the limits of the different types of forces on rail and concluded the torque forces were the most critical.

Review of Rolling Stock Repair Facilities

ARRC provides rolling stock maintenance and servicing at two locations, Anchorage and Fairbanks, both of which have relatively old facilities. The Anchorage facility is the major provider and consists of a group of connecting or adjoining facilities: locomotive shop, car shop, MOW shop, and support shops. The support shops provide traditional functions such as wheel repair, axle and roller bearing work, electrical equipment repair, and sheet metal and pipe repair. At Fairbanks, two basic shop buildings are used for freight car and locomotive maintenance.

The shops of both facilities were designed several decades ago, at a time when ARRC had substantially more equipment than it now owns. For example, in 1980, ARRC had almost twice the number of revenue freight cars as it does now (1,700 versus 872) and a quarter more locomotives (63 versus 50). The maintenance work done by ARRC has also been influenced by railroad industry trends; the railroads are maintaining fewer cars (and, in some cases, locomotives) themselves and sending more work to specialty shops and other kinds of contract facilities, such as those owned by lessors. ARRC's shop activity has been further reduced since it uses some leased locomotives and its major customer, MAPCO, provides its own tank cars.³

ARRC will be stressed financially should it try to maintain the new locomotive fleet using its current rolling stock maintenance facilities:

- The tools, machinery, and work methods now in use at these facilities are archaic and inefficient. Although ARRC could manage when it had a relatively old fleet, maintaining and repairing its new locomotive fleet will require a radically different approach.
- The current obsolete setup of the buildings at both facilities and the need to set up new machinery, tooling, and employee training to maintain the SD70MACs will make it prohibitively expensive to maintain the new fleet using the current shop facilities.
- The Fairbanks locomotive shop is clearly not suitable or needed for its current primary purpose (to work on power assembly change-outs during the winter months using cross-function staff). The quality of work suffers from poor housekeeping and there should be plenty of shop capacity in Anchorage to handle this work.⁴

³ ARRC services and performs minor repairs on over 300 tank cars provided by MAPCO. Most of the heavy repairs needed by the tank cars are performed by contract shops elsewhere in the United States.

⁴ At Fairbanks, the Mercer team observed engine parts haphazardly placed in containers and finished machined engine surfaces damaged because of improper handling.

The car shops at Anchorage and Fairbanks are adequate for their workloads. The housekeeping is very good, the buildings are heated and well lighted, and adequate tooling is available. The primary problem observed by Mercer was the approach to repairing the MAPCO tank cars, which is on an "as needed" basis rather than a periodic (or mileage) basis. The use of these cars for moving an environmentally sensitive product such as petroleum justifies a more aggressive approach to maintenance.

Review of Engineering

In 1993, the Engineering Department was given special attention in Mercer's review. Of concern was the level of expenditures required to maintain the railroad, deferred tie replacement, and the condition of rail and ballast. In past audits, Mercer has pointed out the potential deterioration of track structure due to excess weed growth, particularly on the south end of the railroad. This audit briefly covers all of these issues except expenditures, which have been distorted due to the special capital programs of the last two years.

Ties

Mercer has pointed out in past audits the potential crunch the railroad will face as it is compelled to replace a large number of ties installed by the federal government in the 1950s. The average age of the railroad's ties is now 32 years, far beyond acceptable standards. Since ARRC's rail ties have an estimated life of 45 years, the overall average age of ARRC's ties should be about one-half the average life of an individual tie, or 22.5 years. This translates into a potential backlog of over 300,000 ties in need of replacement.

During the last two years, ARRC has obtained federal financial assistance in installing nearly 180,000 ties. While this is a great improvement over its recent installation record, the railroad has only installed 235,000 ties in total over the last eight years, or 29,375 ties a year. Since Mercer expects that a normal rate of tie replacement for a railroad of ARRC's size would be 43,000 ties replaced annually, ARRC is replacing ties at a rate 30 percent below normal.

With these observations in mind, it is clear that ARRC will need to continue to devote a sizeable portion of its capital resources to tie replacement. Assuming a backlog of 300,000 ties plus normal replacement requirements, ARRC will require an average annual expenditure of \$6 million to \$7 million for ties over the next 10 years.⁵

Rail

Most of ARRC's track is made up of 115-pound jointed rail, with most sections in standard 39-foot lengths. Joints are mostly 4-hole angle bars and there is very limited use of 6-hole bars.

⁵ This assumes that 30,000 of the backlog ties would be replaced each year in addition to about 43,000 at the normal rate. The cost assumes current installation costs with the normal ballast and surfacing that accompanies a tie program.

ARRC's rail was installed by the federal government in the 1950s along with the tie investments noted above. While the rail on the south end of the railroad (south of Anchorage) has received relatively low total tonnage over the years, the north end has received significant tonnage, and at certain locations, particularly in areas with many curves, significant wear is evident. The railhead on 10 to 14 degree curves is about 50 percent worn, particularly on the inside (low) rail. Mercer found evidence of potential rollover conditions due to worn rail at certain locations.

Rail replacements during the last six years have averaged about 2.5 track miles annually. At this pace, ARRC's rail would be replaced in about 200 years. Given current and projected volumes of traffic and the increasing use of heavier-loading cars of 90 to 100 net tons, the railroad will be faced with the need to replace its rail at a faster rate. Mercer's estimate is that ARRC's rail should be replaced at the rate of four track miles annually, with a progressive upgrade program to heavier rail weight. An aggressive rail maintenance program, including periodic rail grinding, would postpone extensive replacement for about 40 years.

Ballast

During the last ten years, ARRC has been using an average of 52,000 cubic yards of ballast per year. In 1997, approximately 80,000 yards will be used. Mercer has observed evidence that past levels of ballast use have been inadequate, particularly with respect to the lower quality of ballast used. Particularly noticeable was inadequate ballast between Dunbar and Fairbanks on the north end and Portage to Seward on the south end of the railroad. Even between Denali and Cantwell where the audit team saw new ballast, the rock was mostly on the surface and not sufficiently tamped under the cross-ties.

Vegetation Control

Vegetation control is needed throughout the ARRC right-of-way. Uncontrolled growth of brush and trees creates hazards and accelerates the deterioration of the grade and subgrade. Some of the major problems are:

- Sight reduction of the locomotive engineer at road grade crossings
- Restricted vision where track and other maintenance gangs are working along the right-of-way
- Improper footing for train crews, resulting in sprained ankles, knees, and pulled muscles
- Dry brush and weeds, which pose a fire hazard for the surrounding area (including ties, bridges, and non-railroad property such as forests and dwellings)
- Restriction of proper drainage which, in turn, causes accelerated track, road bed, and tie deterioration

The efforts of most railroads to control vegetation have been subject to public concern over the environmental impacts of the herbicides that are used. Railroads in the lower 48 states have been

largely successful in being able to use herbicides. The following survey of 25 large and small railroads shows the extent of use and types of herbicide used (Exhibit III-29).⁶

Exhibit III-29
Use of Herbicides by Selected U.S. Railroads

Railroad	Total Miles	Miles Treated	Miles Not Treated	Reason Not Treated	Chemicals Used
Ann Arbor	54	54	0		Contractor supplied
Arizona & California	248	0	248	Desert	None
Bangor & Aroostook	421	421	0		Contractor supplied
Bessemer & Lake Erie	355	355	0		Contractor supplied
CP Rail - Soo Line	5,139	5,139	0		Mostly Roundup
CSXT	6,000	6,000	0		Roundup, Oust, 2-4-D, Garland
Conrail	7,241	7,241	0		Roundup, Oust, 2-4-D
Cedar Rapids & Iowa City	55	55	0		Arsenal, Oust, 2-4-D
Dakota, Missouri Valley & Western	364	304	60	Track out/serv.	Quest, Oust, Karmex
Great Miami & Scioto	65	65	0		Contractor supplied
Idaho Northern & Pacific	220	220	0		Roundup, Oust, 2-4-D, Escort, Telar
Illinois Central	2,687	2,687	0		Arsenal, Oust, 2-4-D
Indiana & Ohio	453	453	0		Contractor supplied
Iowa Interstate	552	552	0		Contractor supplied
Kansas City Southern	2,955	2,955	0		Arsenal, Oust, 2-4-D
Maryland & Pennsylvania	25	25	0		Contractor supplied
Nebraska Central	340	340	0		Oust, Crovar, 2-4-D, Roundup
New Hope & Ivyland	18	18	0		Contractor supplied
Providence & Worcester	200	190	10	Mass. Law - public water supply	Contractor supplied
Red River Valley & Western	710	710	0		Roundup, Karmex, 2-4-D
South Branch Valley	53	53	0		Contractor supplied
Texas, Oklahoma & Eastern	86	86	0		Includes Arsenal
Wisconsin Central	3,000	800 (as needed)	2,200	Budget constraints	Contractor supplied
Wisconsin & Southern	600	600	0		Contractor supplied - includes Roundup
Yorkrail	16	16	0		Contractor supplied

Note: Mileages for CSXT and CR are for specific regions for which information could be obtained.

⁶ Mercer contacted a large group of railroads for this survey. The twenty-five railroads shown were those that responded.

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Section IV: Issues and Recommendations

This section recaps the answers received from management with regard to the recommendations submitted with last year's audit. It also contains new recommendations resulting from our findings during this year's audit.

A. Actions Taken on Last Year's Audit Report Recommendations

In the FY 1996-1997 management audit, Mercer listed 30 recommendations in nine functional areas of the railroad. In view of our primary focus on Passenger Services, about half of the recommendations were related to this department. Management agreed with 25 of the recommendations and did not respond to the other five. The five recommendations which drew no response involved the Passenger Department, information service, safety, and labor relations.

Passenger Operations

With increased patronage, new pull contracts, new management, and a projected bright future for tourism in Alaska, the Passenger Department is gearing up to exploit its potential for growth. All of Mercer's recommendations from last year's audit were agreed with; one was not responded to.

- The 1997 business plan, together with the initial draft of a five-year plan and initiatives, has been completed. Mercer's suggested guidelines were included and some have been implemented. Organizational and managerial changes have been made to improve the department's ability to carry out the plan.
- The train dispatching system is being planned and constructed to include the "conflict check" feature as well as an improved communication and a GPS/Collision Avoidance (Positive Train Separator) system. A project manager is overseeing the program.
- Passenger train on-time performance has significantly improved due to more focused accountability, improved track conditions, and the establishment of definitive performance objectives.
- Passenger Department managers and staff are riding trains more frequently and plan to further escalate their train riding during the 1998 season.
- Train crew size will be reduced where it is prudent to do so and other reductions will be negotiated. As train crews are optimized, operation and safety duties will be transferred to trained on-board passenger services personnel.

- Train crews are now reporting directly to the Passenger Department for all matters involving passenger trains.
- Automated ticket vending machines are being considered for use at certain locations.
- Plans are being developed for joint functions with pull companies. Pre-season planning, post-season evaluation, and joint depot planning have been initiated. Potential strategies are being evaluated to enhance the profitability of both the pull services and ARRC's own offerings on a long-term basis.
- An accelerated capital improvement program has been implemented to improve facilities at each station. Anchorage has been the focus of significant improvements.
- Top management wants to ensure that the entire railroad organization understands its commitment to the railroad's passenger service. To that end, management will seek to clarify its objectives with regard to this service and then obtain buy-in across the organization to ensure its success over the long term.
- A more effective budgeting and cost control process and improved financial analysis is being developed. The Director of Passenger Services and the Chief Financial Officer are focusing on the measurement of passenger service profitability.
- Existing food service and cleaning contracts have been renegotiated to reduce costs, increase profitability, and ensure that performance objectives are met.

Management

Management agreed with the four recommendations made in this area:

- The new CFO will explore possible approaches to more closely monitor financial objectives.
- Some improved measures and management reports are now in place. Each group is accountable for developing its reports and measures in line with stated plans, goals, and objectives. Transportation Managers are now accountable through a performance-based Quality Improvement Process (QIP).
- The Authorization for Expenditure manual has been updated. Training will be provided for everyone involved in the process. Methods have been established to control project costs.

Human Resources

Mercer's two recommendations in this area were accepted.

- The Vice President, Finance and Administration, has begun to examine the most appropriate means to fulfill the services provided by Human Resources.
- The most aggressive program to date for formalized training and benchmarking was put in place in 1996. This program has been made available to virtually the entire staff, especially in Transportation.

Engineering

Management agreed with the one recommendation.

- On the first day of 1997, the accounting system was changed to follow a more basic tracking plan. This will provide an audit trail and database to identify what is spent where and for what purpose.

Mechanical

The one recommendation was accepted.

- In late 1996, the Mechanical Department began looking at the operating costs for each function of work. They are developing direct, overhead, and other elements of expense to enable the composite cost to be determined for each activity. This cost can then be compared to other sources and be used for benchmarking purposes.

B. New Observations and Recommendations

This section contains Mercer's recommendations, most of which are driven by the findings and discussion in Section III of this report.

Personal Injury Prevention

Reducing New Employee Injuries

- 1.) The Passenger Department needs to work more intensively on controlling personal injuries among its staff (especially for new employees).**

During 1997, the Passenger Department experienced a much higher number of incidents in proportion to its total staff, especially among employees with less than two years of service.

- 2.) The time and quality of new employees' orientation and training should be increased.**

There has been a marked increase in personal injuries among new employees not only in the Passenger Department but in the Transportation and Mechanical departments as well.

- 3.) Periodic reviews of new employees' performance need to be conducted for the first two years after an employee is hired.**

The first two years of work appear to be critical in the development of proper injury prevention practices and safe work habits.

- 4.) ARRC should develop a more effective program to screen new employees for physical problems that could prevent them from carrying out their duties without incident.**

The current hiring process is deficient. A high percentage of the new employees who experienced personal injuries in 1997 were found to have physical conditions that either caused the injury or contributed to it. Mercer understands that a specific program to screen employees must conform to acceptable employee hiring standards and legal requirements.

- 5.) ARRC should provide closer monitoring of new employees.**

Supervisors need to keep better tabs on new employees. ARRC could consider a formal "mentoring" program that uses volunteers to help advise new employees. A mentoring program would involve assigning a responsible and experienced employee to each new hire within his or her work group.

Enforcing Safe Work Practices

- 6.) **ARRC should take steps to ensure that safe work practices are established and followed.**

To ensure unsafe work practices don't persist, especially in controlled environments such as the shop facilities, a qualified person should regularly visit each shop to inspect the tools and equipment used and the methods and practices followed in performing all of the tasks carried out in the shop. This person could be from the ARRC or some other railroad. Where problems are found, corrective steps should be taken and information provided to all employees. Monitoring must then be instituted to ensure compliance.

- 7.) **ARRC should ensure that all safety rules are consistently enforced.**

In some cases, rules now in effect are not always complied with; this gradually reduces the respect employees have for vital safety rules. Rules that cannot be reasonably enforced should be modified or eliminated.

- 8.) **A formal process should be initiated for employees to report unsafe conditions and practices.**

This process would include developing a report format for employees to use and ensuring that an appropriate and timely response is made to employees who do submit reports. Some employees who have submitted suggestions in the past have expressed frustration over the lack of response or level of corrective action taken (if any).

Safety Administration and Injury Prevention Programs

- 9.) **ARRC should redefine the responsibilities of the safety manager to reinforce his role as a supporting resource and eliminate any potential conflict in responsibilities.**

As currently defined, the responsibilities of the safety manager conflict with the responsibilities of department managers. Steps should be taken to encourage a closer working relationship between the safety manager and the operating departments.

- 10.) **Assistance should be provided to the safety manager to ensure adequate safety monitoring during peak seasons.**

The significant increase in all levels of activity during the summer months could be much better monitored with the addition of a part-time safety assistant.

- 11.) **A comprehensive training program should be considered for all levels of management and for other employees in key areas of responsibility.**

The lack of adequate training appears to have contributed to the current personal injury problems. The type of training should be customized to meet the most pressing needs of the railroad.

- 12.) ARRC should establish continuing dialogue with peer railroads to share information on personal injury experience and prevention activities.**

Other railroads in the United States are conducting their operations in essentially the same manner as ARRC, with varying results in terms of personal injury experience. A regular exchange of information on personal injury and safety should assist ARRC in developing more effective programs along the lines of those used successfully on other railroads to reduce injuries.

- 13.) ARRC should regularly participate in the Safety Section of the Association of American Railroads (AAR) to gather information on personal injury performance and prevention nationwide.**

Information available from AAR can help ARRC understand trends and experience in the railroad industry as whole.

Improving Personal Injury Tracking and Evaluation

- 14.) ARRC should establish a comprehensive personal injury database for use by all departments.**

This database should provide sufficient information that managers can evaluate where corrective action must be focused and what types of safety programs ought to be considered.

It is most important that absolute causal factors be properly identified and classified as part of the database. For example, knowing about the specific factors that lead to injury or that injuries are occurring primarily among certain groups (e.g., new employees) is key to establishing corrective actions that will effectively redress the problem. Each department should be able to access the database so that it can analyze its own personal injury experience and develop appropriate remedial actions.

Improving Reporting and Investigation

- 15.) The reporting, investigation, and "close-out" on incidents must be formalized and much more complete.**

Full information on each incident is an essential element in developing effective personal injury prevention programs. The reports that Mercer reviewed for the past three years were often far from complete and seriously lacking in the information required to formulate prevention programs.

Improving Morale

16.) Management needs to develop a more open, trusting relationship with employees.

Improving employee morale and attitudes could go a long way toward improving the railroad's safety record. Some ways to do this include more honest, two-way communication, regularly acknowledging employee contributions, and encouraging a greater level of interest and participation by employees in the railroad as a whole.

A variety of approaches should be considered, including the following:

- Open forums might be conducted at key locations such as Anchorage, Seward, and Fairbanks for employees and their families. These informal discussions about the railroad could include brief statements from key managers about all aspects of the railroad (good and bad), question periods, etc. The CEO, VPs and department heads (as well as the local Board member and local management supervisors) should participate. A brief video of the railroad could also be shown at such forums, as many employees and their families probably are not familiar with the "big picture" of what is happening at ARRC. Such a video could show the canyon and track improvements, new locomotives to be acquired, dock improvements, etc.
- All managers should make it a point to increase the frequency of trips out on the railroad to increase their visibility, improve communications, and provide an opportunity for dialogue with employees at all levels.

17.) Top management needs to provide greater support to middle and lower managers.

First-line managers are key to a successful injury prevention program. Special effort at the highest levels of management needs to be made to resolve the concerns of these managers and provide them with the support they need to effectively carry out injury prevention programs.

18.) ARRC should develop a program to recognize employees who have excellent safety records or who have acted in a manner that has contributed to safe operations.

Personal recognition is an important incentive. It can make employees feel more involved in the railroad's progress in reducing injuries. The current safety program does not appear to include this type of recognition.

- 19.) ARRC should consider establishing a friendly "competition" between departments to improve personal injury performance.**

Using the ratio of number of incidents per 200,000 man-hours as a measure of performance, an annual competition could be established between the three major departments. The incentive could be, for example, an engraved "trophy cup," which would go to the winning department for the year, and would then pass the following year to the next department to win. Awards could also be made at an annual safety luncheon, with appropriate staff invited and recognized for their contributions to safety at the railroad.

Other Suggestions

- 20.) ARRC might consider a professional safety review, such as that provided by DuPont.**

An independent review by a recognized railroad consulting firm in the field of safety would provide a more detailed diagnosis of the causes of ARRC's current injury prevention problems and offer the best approaches to reducing injuries.

New Locomotive Fleet

- 21.) Special locomotive engineer instructions and training must be established for proper train handling of the SD70MAC locomotives; train handling should be monitored using the train's on-board microprocessor control.**

The high tractive effort of the new locomotives will warrant careful control in how they are handled over certain vulnerable locations in the railroad's track structure.

- 22.) Detailed stress testing should be performed to measure track forces caused by the new locomotives to determine the level of longitudinal and lateral stresses.**

If a problem is indicated, the following corrective actions should be considered where excess strain on track occurs:

- Modify engineer train handling instructions as necessary
- Consider a rail welding program at critical locations
- Replace 4-hole angle bars with 6-hole bars
- Place additional rail anchors and upgrade tie condition as needed at critical locations

23.) ARRC should investigate alternative financing and ownership options, particularly the advantages of leasing the GP38s and having them rebuilt and maintained by the lessor.

24.) ARRC should upgrade sidings that are substandard, particularly on the Anchorage to Fairbanks route.

Certain sidings are clearly inadequate for use by the new locomotives.

25.) The planned use of the new locomotives on the Express and Suneel trains should be reexamined.

It is more difficult to justify the use of the new locomotives on these trains.

26.) ARRC should program additional funds for rebuilding the eight GP38s within the next five years.

With a smaller fleet, the GP38s will play a more critical role in providing service than is now the case. The fleet will require higher levels of availability than is obtainable from ARRC's current plans for these locomotives. Planned maintenance costs should also be reexamined to ensure that they are sufficient, given the higher levels of reliability that will be required.

Mechanical Department

27.) The Fairbanks locomotive maintenance shop should be closed.

ARRC has surplus locomotive maintenance shop capacity now and will have even greater surplus with associated costs in the future with the acquisition of the SD70MAC locomotives.

28.) ARRC needs to provide better maintenance for the MAPCO tank cars.

The MAPCO tank cars are now repaired on a defect-card basis. The continuation of this exception-type approach could expose the railroad to unacceptable risk, particularly given the growth in this business segment and the plan to accomplish much of this growth by better utilizing the existing fleet. Mercer recommends that arrangements be made with MAPCO to establish a periodic (or mileage) basis for inspection and repair as necessary.

Engineering Department

29.) ARRC should continue the program of replacing 60,000 crossties per year for the next six years.

ARRC's program for tie replacement has been lagging in recent years and

while federal assistance in 1996 and 1997 has helped restore a more normal replacement cycle, a relatively high level of tie replacements needs to be continued.

- 30.) Rail replacement is needed at a rate of 4 track miles per year. Rail grinding is needed every 3 to 4 years rather than every 5 to 6 years. Improvement in rail joint maintenance is needed as well.**

With the heavier per car loadings now used by ARRC (compared to lighter loadings just a few years ago) and the expected increase in petroleum traffic, a more aggressive rail maintenance program appears to be warranted.

- 31.) ARRC needs to be using 80,000 cubic yards of ballast per year.**

In recent years, ARRC has used an average 52,000 cubic yards of ballast annually. To maintain an adequate infrastructure, a higher level of use is recommended.

- 32.) ARRC should develop a program of vegetation control for the right-of-way.**

Poor vegetation conditions are clearly a hazard and add to the cost of infrastructure maintenance.

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Appendix A: Safety Database: Injury Reporting for 1997

Employment Date	Incident No.	Date of Incident	Dept.	Age	Level Of Severity				Injury Type	Area Affected	Causal Factor				Physical Condition	Back Problem
					NR	LT Days	FRA	LD Days			Careless	Work Practice	Unsafe Cond.	No Event		
Oct-74	1	3-Jan	M	40		18			Strain	Back			1		1	1
Dec-74	2	30-Jan	T	51		106			Strain	Arm & Shoulder			1			
Aug-85	3	31-Jan	M	55			1		Pain	Hand & Arms				1	1	
Jun-84	4	6-Feb	M	53			1	30	Fracture	Thumb			1			
Mar-75	5	9-Feb	T	42	1				Pain	Back		1			1	1
Aug-74	6	10-Feb	T	46	1				Pain	Back			1		1	1
Apr-84	7	12-Feb	M	58	1				Bruse	Hand	1					
Jun-73	8	13-Feb	T	49		21			Pain	Back				1	1	1
Sep-86	9	13-Feb	M	50	1				Bruse	Wrist	1					
Jul-74	10	18-Feb	M	43		16			Hernia	Hernia		1			1	
Mar-85	11	18-Feb	M	52	1				Pain	Wrist		1				
Jul-74	12	19-Feb	E	46		8			Strain	Back		1			1	1
Mar-76	13	24-Feb	E	48	1				Pain	Neck				1		
Jun-82	14	24-Feb	M	51		60				Various			1			
Sep-87	15	26-Feb	T	56	1				Strain	Arm			1			
Mar-86	16	26-Feb	T	40		85			Pain	Back				1	1	1
May-80	17	6-Mar	T	36		1			Bruse	Foot			1			
Aug-72	18	13-Mar	T	54	1				Pain	Back			1			1
Feb-87	19	21-Mar	M	53	1				Strain	Shoulder	1				1	
May-75	20	21-Mar	T	41	1				Strain	Back			1			1
Aug-86	21	4-Apr	E	26		12			Bruse	Knee	1				1	
May-80	22	6-Apr	T	35		2			Strain	Leg		1				
Apr-83	23	8-Apr	M	45	1				Pain	Hand		1				
Oct-82	24	10-Apr	M	49			1	11		Arm				1	1	
May-80	25	16-Apr	T	39	1				Pain	Knee			1			
Oct-83	26	22-Apr	E	31	1				Eye	Eye	1					
May-81	27	24-Apr	T	60		24			Strain	Knee			1		1	
May-85	28	30-Apr	T	54		5			Strain	Shoulder		1			1	
Feb-82	29	2-May	M	48		5			Strain	Back		1			1	1
Jul-77	30	6-May	E	41			1		Strain	Back		1			1	1
May-87	31	7-May	T	40	1				Strain	Knee		1				
Feb-75	32	7-May	M	53	1				Bruse	Hand			1			
May-87	33	18-May	P	46		5			Fracture	Elbow	1					
Mar-82	34	27-May	M	43		22			Strain	Shoulder				1	1	
Mar-82	35	30-May	E	39			1		Pain	Hand		1				
Mar-83	36	3-Jun	E	37	1				Cut	Nose		1				
Jun-86	37	18-Jun	E	32			1	1	Pain	Arm		1				
Mar-87	38	19-Jun	M	34			1	35	Strain	Back		1			1	1
May-80	39	23-Jun	E	37			1	2	Pain	Toe	1					
Oct-86	40	25-Jun	M	55			1		Strain	Thumb	1					
Mar-87	41	7-Jul	P	30			1			Various				1		
May-86	42	8-Jul	P	19			1		Strain	Hand	1					
May-86	43	14-Jul	E	31			1	2	Cut	Arm		1				
Aug-75	44	15-Jul	M	46		1			Pain	Knee		1				
Dec-86	45	25-Jul	M	27					Strain	Elbow		1			1	
Apr-86	46	28-Jul	T	43		19	1		Strain	Knee			1			
Jun-87	47	30-Jul	E	28	1				Pain	Abdomen		1			1	
Apr-81	48	1-Aug	T	38		2			Strain	Neck				1		
Apr-87	49	4-Aug	E	51			1	9	Strain	Knee		1				
Jun-83	50	5-Aug	P	45	1				Strain	Back		1			1	1
Apr-87	51	13-Aug	P	27	1				Pain	Hand				1	1	
May-87	52	13-Aug	E	32		3			Strain	Shoulder				1	1	
Aug-87	53	13-Aug	T	28		1			Cut	Shoulder			1			
May-86	54	15-Aug	P	22	1				Strain	Back		1			1	1
May-86	55	20-Aug	P	39		4			Strain	Back		1			1	1
Apr-87	56	24-Aug	T	33	1				Strain	Ankle	1					
Mar-88	57	30-Aug	P	51	1				Strain	Foot				1		
Apr-88	58	31-Aug	T	28			1		Strain	Wrist	1					
Apr-84	59	2-Sep	M	61		7			Strain	Knee	1				1	
Sep-87	60	5-Sep	T	56			1	5	Pain	Knee				1	1	
May-82	61	11-Sep	E	50	1				Strain	Grn				1	1	
May-83	62	16-Sep	E	50			1		Strain	Back				1	1	1
Aug-80	63	22-Sep	T	50		3			Pain	Hand		1				

Appendix A: Safety Database: Injury Reporting for 1996

Employment Date	Mercer Incident No.	Date of Incident	Dept.	Age	Level Of Severity				Injury Type	Area Affected	Causal Factor				Physical Condition	Back Problem
					NR	LT Days	PRA	LD Days			Careless	Work Practice	Unsafe Cond.	No Event		
Sep-74	1	2-Jan	M	44	1				Pain	Hand	1					
Jul-73	2	2-Jan	M	47	1				Pain	Groin	1					
Mar-84	3	4-Jan	M	46			1		Cut	Knee	1					
Jun-81	4	14-Jan	M	33			1	4	Pain	Back				1		1
Jul-80	5	3-Feb	T	26		1			Pain	Knee			1		1	
Jun-80	6	5-Feb	T	38			1		Cut	Eyebrow	1					
Jun-89	7	18-Feb	P	25			1		Pain	Back			1			1
Aug-73	8	23-Feb	M	42			1	5	Cut	Hand			1			
Apr-81	9	24-Feb	T	41	1				Pain	Back			1			1
Jan-86	10	26-Feb	A	37			1		Pain	Back			1			1
May-73	11	5-Mar	E	47	1				Hearing	Ear				1		
May-86	12	29-Mar	T	38	1				Pain	Back			1		1	1
Jul-76	13	3-Apr	T	38	1				Pain	Eye			1			
May-74	14	5-Apr	E	52	1				Pain	Back		1			1	1
Jul-75	15	11-Apr	M	51		6		39	Pain	Back		1			1	1
May-83	16	12-Apr	E	58	1				Pain	Eye	1					
Jun-84	17	19-Apr	M	52		19		6	Pain	Back		1			1	1
Nov-82	18	18-Apr	M	37			1		Pain	Hand				1	1	
Mar-85	19	15-May	E	45			1	13	Pain	Back				1	1	1
Apr-76	20	20-May	T	38	1				Pain	Hearing			1			
May-86	21	21-May	T	32	1				Pain	Eye				1		
Mar-86	22	22-May	T	38			1		Pain	Hand	1					
Jun-73	23	26-May	T	48		2			Cut	Hand	1					
May-86	24	15-Jun	E	44		1		5	Pain	Hand	1					
Jun-86	25	18-Jun	E	24		5			Pain	Toe	1					
Aug-81	26	19-Jun	M	56		7			Pain	Arm		1			1	
Apr-89	27	26-Jun	E	38	1				Cut	Hand	1					
Mar-86	28	2-Jul	E	45			1		Strain	Arm		1			1	
Mar-89	29	8-Jul	E	38			1		Pain	Back	1					1
May-81	30	8-Jul	T	58			1		Pain	Back		1			1	1
Jun-84	31	11-Jul	M	54		63			Strain	Arm		1			1	
May-79	32	12-Jul	T	44		90			Fracture	Ankle	1					
Jul-71	33	20-Jul	E	48		8			Misc		1					
Jun-84	34	23-Jul	M	54	1				Cut	Lip		1				
May-84	35	28-Jul	M	41	1				Mental	Mental				1	1	
May-82	36	1-Aug	E	30			1		Cut	Hand	1					
Aug-74	37	5-Aug	T	45			1		Infection	Ear				1		
Jun-82	38	6-Aug	M	43		40		54	Cut	Hand		1				
Apr-80	39	9-Aug	M	50		103			Strain	Hand				1	1	
Aug-83	40	13-Aug	E	46	1				Pain	Eye	1					
Apr-82	41	14-Aug	M	28			1		Cut	Hand	1					
Aug-86	42	19-Aug	M	54		12		15	Strain	Back		1			1	1
Apr-89	43	20-Aug	E	36		2			Cut	Hand	1					
Jul-86	44	20-Aug	E	23	1				Cut	Hand				1		
Jul-75	45	21-Aug	T	47	1				Strain	Foot			1			
Mar-85	46	29-Aug	E	52	1				Pain	Ankle	1					
May-86	47	4-Sep	E	27		29			Cut	Ankle			1			
May-83	48	8-Sep	E	58		5			Strain	Ankle			1			
Aug-74	49	11-Sep	M	48		30		46	Strain	Ankle	1					
May-82	50	17-Sep	T	37	1				Hearing	Ear			1			
May-86	51	24-Sep	E	40			1	12	Strain	Back		1			1	1
May-82	52	30-Sep	E	35	1				Cut	Leg	1					
May-89	53	1-Oct	T	33		6			Strain	Back				1	1	1
Mar-89	54	7-Oct	E	38		60			Strain	Back		1			1	1
Jun-86	55	11-Oct	T	43			1		Pain	Shoulder				1	1	
Aug-71	56	26-Oct	T	44	1				Strain	Back		1			1	1
Jun-70	57	28-Oct	E	52			1	43	Pain	Wrist				1	1	
May-83	58	3-Nov	T	33	1				Pain	Hand	1					
Jan-75	59	6-Nov	M	46			1	7	Pain	Elbow				1	1	
Sep-86	60	7-Nov	M	29			1	34	Cut	Knee	1					
May-82	61	10-Nov	M	52		14		21	Pain	Shoulder	1					
Sep-75	62	14-Nov	T	48			1		Pain	Arm			1		1	
Jun-80	63	18-Nov	E	48		4			Strain	Back		1			1	1
May-78	64	21-Nov	E	43	1				Strain	Back	1					
Sep-74	65	25-Nov	M	44		25			Cut	Hand		1				
Mar-89	66	19-Dec	P	50			1		Strain	Back				1	1	1
Aug-86	67	29-Dec	M	54			1		Pain	Shoulder	1					
May-80	68	29-Dec	T		1				Pain	Hand	1					

Appendix A: Safety Database: Injury Reporting for 1995

Employment Date	Merger Incident No.	Date of Incident	Dept.	Age	Level Of Severity				Injury Type	Area Affected	Causal Factor				Physical Condition	Back Problem
					NR	LT Days	FRA	LD Days			Careless	Work Practice	Unsafe Cond.	No Event		
May-85	1	2-Jan	E	46		1	1	17	Strain	Back		1		1	1	1
Jun-78	2	9-Jan	T	39		1			Pain	Shoulder		1		1		
Aug-81	3	27-Jan	T	53	1				Strain	Shoulder						
Aug-93	4	31-Jan	E	37			1		Strain	Back				1	1	1
Apr-86	5	1-Feb	E	46			1		Pain	Jaw	1					
Mar-92	6	10-Feb	E	24		235			Strain	Back		1			1	1
Jun-73	7	13-Feb	T	47		27			Strain	Back				1	1	1
Apr-84	8	26-Feb	T	42	1				Pain	Arm				1	1	
Jun-75	9	18-Feb	T	39	1				Pain	Neck		1				
Jul-91	10	23-Feb	M	30			1		Strain	Back		1			1	1
Aug-71	11	24-Feb	T	43	1				Strain	Knee	1			1	1	
Jun-78	12	26-Feb	T	39		46			Strain	Knee				1	1	
Jun-80	13	26-Feb	E	43		1			Strain	Back		1				1
Aug-82	14	2-Mar	A	55			1		Strain	Back		1				1
Apr-89	15	8-Mar	E	47		1		7	Strain	Hip	1					
Oct-82	16	20-Mar	M	40			1	4	Strain	Arm		1				
Jun-86	17	23-Mar	T	42	1				Pain	Hand	1					
Dec-91	18	26-Mar	E	31			1		Pain	Eye	1					
May-73	19	10-Apr	E	48	1				Strain	Back		1			1	1
Aug-74	20	18-Apr	T	41	1				Hearing	Ear				1	1	
May-83	21	20-Apr	A	37	1				Pain	Wrist				1	1	
Feb-85	22	20-Apr	A	45	1				Pain	Knee	1					
Aug-73	23	21-Apr	T	52			1		Cut	Hand	1					
Aug-74	24	24-Apr	E	47		1		18	Strain	Back	1				1	1
Jan-95	25	12-May	E	25		2	1	1	Pain	Chest	1					
May-82	26	2-Jun	E	34			1		Pain	Eye		1				
May-82	27	8-Jun	E	25		2			Cut	Eye	1					
Apr-81	28	11-Jun	T	26		21			Strain	Ankle	1					
May-89	29	11-Jun	E	35			1		Cut	Hand		1				
Jul-85	30	13-Jun	E	41		43			Pain	Hand		1				
Jul-82	31	26-Jun	E	54	1				Pain	Shoulder			1			
Jun-89	32	3-Jul	A	24	1				Pain	Leg	1	1				
Mar-82	33	11-Jul	A	42	1				Pain	Ankle						1
Jun-74	34	14-Jul	T			2			Pain	Back			1			
Apr-90	35	15-Jul	T		1				Pain	Neck		1				
Oct-81	36	15-Jul	T	39	1				Strain	Neck		1				
Apr-81	37	15-Jul	T	27	1				Strain	Neck		1				
May-83	38	25-Jul	E	47	1				Strain	Abdomen		1				
May-74	39	1-Aug	T	43		8			Strain	Back				1	1	1
Apr-90	40	19-Aug	T	28	1				Cut	Hand			1			
May-83	41	21-Aug	T	42	1				Pain	Hand	1					
May-81	42	21-Aug	T	26	1				Pain	Head	1					
Aug-85	43	23-Aug	E	24			1		Cut	Hand	1					
Jan-74	44	23-Aug	T	44	1				Pain	Eye		1				
Nov-94	45	29-Aug	E	27			1		Strain	Ankle	1					
May-82	46	30-Aug	E	27		9			Pain	Toe	1					
Jun-83	47	6-Sep	E	29	1				Strain	Groin	1				1	
Feb-82	48	12-Sep	E	22			1	8	Pain	Elbow				1	1	
May-89	49	21-Sep	T	46		33			Pain	Wrist			1			
Apr-84	50	22-Sep	M	44	1				Pain	Elbow	1					
May-82	51	25-Sep	E	46		61			Strain	Back				1	1	1
Jun-83	52	27-Sep	E	38	1				Cut	Foot	1					
Feb-83	53	13-Oct	E	43		19		25	Strain	Knee		1			1	1
Nov-75	54	15-Oct	T	40		5			Strain	Back		1				1
Apr-84	55	17-Oct	E	30		9			Cut	Mouth	1					
Apr-89	56	23-Oct	E	29			1	37	Strain	Shoulder				1	1	
Apr-88	57	34-Oct	T	61	1				Pain	Head			1			
Apr-81	58	26-Oct	T	23		3			Strain	Ankle			1			
Apr-89	59	26-Oct	T	28		36			Strain	Knee			1			
Feb-83	60	31-Oct	E	40	1				Pain	Hip	1					
Jun-82	61	13-Nov	E	44	1				Pain	Arm			1			
Mar-85	62	13-Nov	E	52	1				Strain	Arm			1			
Jun-80	63	30-Dec	E	39	1				Strain	Back		1			1	1
May-90	64	21-Dec	E	27		6			Strain	Wrist		1				

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Hollis A. Henderson

Mr. Henderson, a Senior Consultant to Mercer Management Consulting, specializes in locomotive and rollingstock management restructuring, maintenance facilities and procedures rationalization, and workshop management organization and restructuring. He has 40 years of railway operating experience in management and engineering, and in his six years of consulting has worked extensively in Australia and the United States.

As chief mechanical officer for the Southern Pacific Railroad, Mr. Henderson was responsible for locomotive and rollingstock design, reliability, and operation within budgetary limits. He served in management positions at Conrail as vice president, rehabilitation and planning, of motive power, rollingstock, and track equipment. As Conrail's chief mechanical officer, he was responsible for the consolidation and restoration of the entire fleet – seven railways' combined locomotives, rollingstock, EMUs, carriages, and track infrastructure maintenance equipment.

Mr. Henderson has worked with the State Rail Authority (SRA) of New South Wales since 1988. The projects he was involved with include:

- Locomotive and rollingstock management restructure
- Staffing level rationalization in accord with revised maintenance procedures and facilities
- Rationalization of all maintenance facilities for Rail Freight and CityRail operations
- Improvement and reduction of locomotive and rollingstock fleet
- Design and implementation procedures for rollingstock run-through facilities for locomotives and freight wagons

Since 1992, Mr. Henderson has worked with Queensland Rail to address various mechanical and rollingstock issues. He was the author of the December 1992 Passenger Rollingstock Study – Maintenance and Workshop Requirements. He also participated in the consolidation and amalgamation of workshops and depots for reducing maintenance costs of locomotives and rollingstock, and reviewed all passenger rollingstock maintenance facilities in Brisbane as well as throughout the Queensland Rail system.

Mr. Henderson is affiliated with the Association of American Railroads, the American Society of Mechanical Engineers, the Railway Maintenance Officers Association, the Pacific Railways Association, and the New York Railway Association. He holds degrees at the university level in transportation management, electrical engineering, mechanical engineering, industrial engineering, and labor law.

Alan G. Dustin

Mr. Dustin, a Consultant to Mercer Management Consulting, has almost 20 years of experience as a senior executive of small to medium-sized railroads.

During the past seven years, he has served as a consultant on a variety of railroad studies, either independently or as a member of a consulting team. His recent activities have included:

- **Studies on Amtrak's ability to become self-sufficient**
- **Several due diligence investigations**
- **Commuter and long-distance passenger privatization in Buenos Aires**
- **Operational audit of the tunnel rail operations for the Channel tunnel**
- **Analysis of the extension of the subway system in Washington, D.C.**
- **Preparation of several bids for acquisition of shortline freight systems**
- **Preparation of bids for commuter train operating systems**
- **Analysis of commuter systems and cost savings for four South African systems**
- **Annual operational and financial audit of the Alaska Railroad Corporation over a six-year period**

Mr. Dustin recently served for more than four years as vice president and general manager of New Jersey Transit Rail Operations, where he was responsible for the operation of a growing commuter service with an annual operating budget of \$255 million and a capital budget of \$175 million. Under Mr. Dustin's leadership, the railroad increased ridership by 40 percent while reducing rail costs per passenger mile by 15 percent; achieved a 60 percent ratio of fare-box recovery to operating expenses, the best in the nation for a rail commuter operation; and successfully carried out, under traffic, a massive program for rehabilitating and improving track and facilities.

As president and chief operating officer of the Boston & Maine Corporation/Maine Central Railroad, Mr. Dustin participated in the planning and implementation of the consolidation of these two railroads following their purchase by Guilford Transportation Industries, Inc. He was responsible for the operation of freight and commuter service with an annual budget of \$200 million and developed strategies for improving profitability.

Earlier in his career, as president and chief executive officer of the Boston & Maine Corporation, Debtor, Mr. Dustin turned around a bankrupt \$180 million freight and commuter railroad, guiding it through a reorganization that led to its sale as a viable company. In this capacity, he

negotiated innovative wage, work rule, and crew size agreements, saving \$8 million annually; established a strong marketing department that developed more than \$22 million in new sources of revenue to offset losses from a shrinking industrial base; and reduced annual labor costs \$5 million over a 10-year period by consolidating, mechanizing, and centralizing station agencies, train control towers, and manual crossing protection.

Mr. Dustin has also served as executive vice president of the Bangor and Aroostook Railroad, chairman of the board of the Pittsburgh and Shawmut Railroad, and division superintendent of the Erie Lackawanna Railroad. He is a member of the National Research Council's "Committee for High-Speed Ground Transportation," which has oversight of Federal Railway Administration research and development and next generation rail needs at the request of the House of Representatives.

Robert B. Waldner

Mr. Waldner, a Senior Consultant to Mercer Management Consulting and a former Senior Associate with the firm, is a specialist in transportation with a focus on freight and passenger railroads. He has served in operating and marketing capacities within the railroad industry and has more than 25 years of experience as a transportation and general business consultant. He has addressed problems requiring a broad knowledge of the marketing, regulatory, operating, and financial environment in which the railroad industry functions. Mr. Waldner's consulting work includes the following projects:

- Assisting an Eastern U.S. state in determining its fair share of the deficit of a commuter rail operation that it shares with an adjacent state
- Assisting several railroads in disposing of light density lines, including serving on bid review committees examining the suitability of alternative proposals for continued operations
- Assisting the Agent Banks assess the preparedness of the EuroTunnel (France-England tunnel) management to operate the tunnel railway
- Assisting several railways abroad in evaluating the efficiency and effectiveness of their commuter railway operations
- Performing an annual review of the operations of the Alaska Railroad, including all aspects of operating and non-operating functions
- Helping Amtrak design and use passenger train costing systems, work that involved custom-designing cost models for approximately 20 trains
- Assisting railroads, motor carriers, and state and federal agencies with transportation market analysis and forecasting
- Preparing forecasts of future freight car needs for equipment suppliers and determining the value of freight cars owned by lessors
- Creating and using proprietary benchmark databases for various railroad studies to identify opportunities for improvement
- Assisting various users of transportation in developing transportation costing methodologies
- Furnishing general counsel on railroad market prospects, operating costs, asset requirements, and asset valuation to financial institutions, railroads, shippers, and parties interested in acquiring railroad properties
- Assisting a European government in reviewing the operations of its rail system and in designing new intermodal services for the Channel tunnel

Robert B. Waldner

Page 2

- **Helping railways determine the reasonableness of their rail freight rates**
- **Assisting the American Association of Railroads and a lessor of freight cars in determining the marketing impact of combination trucks on the railroad industry**

Mr. Waldner was previously a senior associate in the operations management practice at Mercer. Before joining Mercer, he worked at Harbridge House, Inc.

Earlier, Mr. Waldner was with Illinois Central Industries, where he served as director of service evaluation in the Information and Control System Department and, later, as director of service and equipment evaluation in the Market Research Department. His responsibilities included designing an information and control system and preparing reports for obtaining better control of operations. He also served the St. Louis-San Francisco Railway in both operating line and staff capacities. He helped implement one of the first successful service quality control systems in the railroad industry and assisted with the application of terminal and network models to railroad operations. At Melpar, Inc., he was involved in systems design and operations research.

Mr. Waldner received a B.S. in engineering from Princeton University and an M.S. in transportation engineering from Cornell University.

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**Fiscal Year 1994-1995 Management
Performance Audit**
Public Review Document

Final

October 1994

**Prepared for:
The Alaska Railroad Corporation**

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Performance Audit**
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Introduction

This report contains the results of Mercer Management Consulting's (Mercer's) fourth annual management audit of the Alaska Railroad Corporation (ARRC).¹ Mercer performed the audit in September and October 1994 under contract with the ARRC Board of Directors in response to statutory requirement AS.42.40.270. The ARRC Board is required to have an annual performance audit conducted by a recognized railroad management expert to ensure that the railroad is being managed and operating effectively and efficiently.

This report contains the following four sections, as well as an appendix:

Section I: Scope of the Audit and Personnel Involved

Section I explains the subject areas covered in the audit, describes the information collected and reviewed, introduces the members of the audit team and their roles, and lists those on the railroad and its Board who were interviewed.

Section II: Update of ARRC's Financial and Operating Performance

Section II updates ARRC's calendar year 1993 financial and operating performance.

Section III: Findings of the Management Audit

Section III provides the basic findings of the audit in the various areas examined.

Section IV: Issues and Recommendations

Section IV draws upon the information and observations presented in Sections II and III to highlight certain issues of importance to the railroad and to make recommendations that Mercer hopes will be useful in the management of the railroad.

¹Mercer Management Consulting was formerly named Temple, Barker & Sloane/Strategic Planning Associates.

Section I: Scope of the Audit and Personnel Involved

Subject Areas and Approach

This year's management audit represents the fourth annual audit undertaken by Mercer.

- The first audit (for FY1991-1992) was devoted to developing a basic understanding of the railroad and its organization, operating characteristics, efficiency, markets, and physical condition. Special attention was also placed on examining the railroad's physical plant and maintenance, understanding its maintenance of way (MOW) practices and procedures, and observing its condition. This included a physical inspection of the main lines by a professional track engineer from a hi-rail vehicle and on the ground.
- The second audit (for FY1992-1993) updated the analyses of the prior year, reviewed the many management changes that had taken place since the last audit and their likely impact on all aspects of the railroad, and conducted a more detailed examination of the railroad's marketing/sales organization and an evaluation of its markets. A principal focus of this audit was a detailed examination of the Mechanical Department and the condition of the rolling stock by a well-known specialist in that field. The team also inspected the property from Fairbanks to Anchorage using the business car and took a hi-rail trip from Whittier to Anchorage.
- The third audit (for FY1993-1994) continued the practice of updating many of the analyses of the prior years' audits and reviewed continuing management changes. A brief examination was also made of the expected financial impact of the Seattle barge service that management took over in March 1993. Because a major revamping of the railroad's information systems was under way, Mercer also had two railroad information systems experts join the audit team to look at the railroad's MIS plans and progress.

For this year's audit, Mercer was asked to augment its regular review of the railroad with (1) an examination of the ARRC Seattle service to determine how the railroad has been impacted by this service, (2) a review of the adequacy of the marketing and sales organization to meet the challenges the railroad is facing, and (3) a look at the effectiveness of the Passenger Department.

Members of the Audit Team

The principal members of the audit team were Robert Waldner, Alan Dustin, and Michael Smith (resumes are presented in Appendix A). Their roles were as follows:

Mr. Waldner organized the inspection visit and interviewed key members of the railroad's management. He adds to the audit effort a broad national and international background in operations, planning, and marketing and has assisted railroads, other modes of transportation, financial institutions, government agencies, and users of transportation in a large variety of management assessment studies, including extensive operational reviews of freight and passenger railroads in North America and abroad.

Mr. Dustin interviewed key members of management, particularly in the railroad's administrative, personnel, safety, operations, mechanical, and engineering functions. He brings to the audit team many years of executive experience in managing freight and passenger railroads, and as a consultant has assisted a variety of clients with railroad management problems in the United States and abroad.

Michael Smith is an expert in Class I and regional and shortline railroad marketing. He brings to the audit team many years of experience in organizing marketing and sales departments and managing efforts to develop new business opportunities.

Railroad Personnel Interviewed

The inspection visit started on September 10, 1994, at Anchorage and ended on September 17, 1994. One member of the audit team visited Seattle. All members inspected railroad facilities in several separate trips by hi-rail vehicle and on the Seward passenger train. These inspections took place at Anchorage and south of Anchorage, including Whittier and Seward.

This year's audit consisted primarily of interviews with members of the ARRC organization at the headquarters building at Anchorage, a luncheon meeting with several members of the Board's Audit Committee, and discussions with staff at Seattle.

The following ARRC staff, Board members, and representatives from the Canadian National Railroad and Burlington Northern Railroad were interviewed:

- | | |
|--------------------|---|
| • James Blasingame | Vice President, Corporate Affairs |
| • Tom Brooks | Chief Engineer |
| • John Burns | Vice President, Real Estate |
| • Bruce Carr | Manager, Corporate Planning |
| • Sally Carter | Passenger Operations Supervisor |
| • Robert Cox | Vice President, Operations |
| • Frank Coletta | Manager, Safety and Health |
| • Richard Dyson | Manager, Labor Relations |
| • George Erickson | Manager, Marketing Development |
| • Cindy Gilder | Manager, Environmental Services |
| • Laurie Gray | Customer Representative, Canadian National Railroad |
| • Deborah Hansen | Manager, Marketing and Sales Operations |

• Robert S. Hatfield, Jr.	President and CEO
• Larry Houle	Manager, Passenger Services
• John Kincaid	Chief Mechanical Officer
• Richard Knapp	Vice President, Marketing
• Dale Lindsey	Board Member
• Loren Lounsbury	Board Member
• Evan McKinney	Manager, Contracts & Supply
• John O'Meara	Vice Present, Finance & Administration
• Janice Nolan	Chief Train Dispatcher
• Curt Richards	Sales Manager, BN
• Patrick Shake	Superintendent, Transportation
• Janet Swanson	Customer Service Supervisor
• Rob Halpin	Sales Account Executive
• Wayne Parker	Sales Account Executive
• Chelcie R. Eager	Supervisor, Rates/Transfer/Delivery
• Don Claussen	National Accounts
• Becky Grady	Interline Services Coordinator
• Kevin Meier	Customer Service Supervisor
• Katherine Adams	Accounting: Audit Supervisor
• Sally Carter	Station Supervisor
• Janet Swanson	On-board Services Supervisor

Section II: Update of ARRC's Financial and Operating Performance

This section briefly updates ARRC's financial and operating performance, generally following the format used in prior Mercer audit reports. One exception is that comparisons with other U.S. regional and Class I railroads have not been made this year, as the essential points of the comparisons were raised last year and have not greatly changed since.

This update is presented in five subsections:

- Financial performance
- Freight and passenger contribution
- Freight traffic and revenues
- Passenger traffic and revenues
- Operating expenses

Financial Performance

In 1993, ARRC reported a corporate net loss of \$2.67 million, which represented a \$5 million decline from a net income of \$2.35 million in 1992. As shown in Exhibit II-1, almost all of the decline in income was due to an 8 percent decline in revenues while operating expenses held nearly constant. With losses from operations of \$5.90 million, the railroad's operating ratio (operating expenses as a percentage of revenues) surged to 110.4 percent from 100.9 percent in 1992. Non-operating income and expenses were relatively unchanged from 1992, with income from real estate being the principal reason that the railroad's net loss was held to \$2.67 million.

Losses generated by the railroad's transportation operations during 1993, and extending into 1994, caused ARRC to borrow nearly \$5 million on a short-term basis against its line of credit. This additional debt will further exacerbate ARRC's financial situation and undoubtedly have a chilling affect on its 1995 capital improvement program.

Freight and Passenger Contribution

The railroad's passenger service continued to make a significant contribution after variable costs are deducted from revenues. Variable costs are those costs that are most directly affected by the movement of trains and handling of passengers and/or freight and include fuel, train crews, station costs, freight car and locomotive maintenance, etc. The railroad's freight service had a substantial decline. As shown in Exhibit II-2, freight service contribution declined to \$11.5 million, a \$6.1 million decline from its contribution in 1992. Most of the decrease in contribution was due to the railroad's Seattle interline service.

Exhibit II-1

Financial Performance of ARRC: 1980 to 1993
(Thousands)

											Percentage Change From					
	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1980 to 1985	1985 to 1990	1990 to 1991	1991 to 1992	1992 to 1993	
Operating Revenue	\$25,544	\$57,092	\$47,239	\$45,457	\$51,207	\$55,065	\$61,913	\$61,773	\$61,840	\$56,920	123.5%	8.4%	142.4%	-	0.1%	-8.0%
Operating Expenses	33,187	55,413	54,264	46,400	46,898	55,453	59,904	59,630	62,427	62,822	67.0%	8.1%	80.5%	-	4.7%	0.6%
Operating Ratio	129.9%	97.1%	114.9%	102.3%	95.5%	100.7%	96.8%	96.5%	100.9%	110.4%	-	-	-	-	-	-
Income from Operations	\$-7,643	\$1,679	\$-7,025	\$-1,033	\$2,309	\$-388	\$2,009	\$2,143	\$-587	\$-5,902	-	19.7%	-	6.7%	-	-
Nonoperating Income																
Real Estate	1,687	4,095	4,934	4,821	4,438	3,932	3,718	3,592	3,616	3,732	142.7%	-9.2%	120.4%	-3.4%	0.7%	3.2%
Other Income	124	1,920	1,719	890	585	637	879	436	509	611	1,448.4%	-54.2%	608.9%	-80.4%	16.7%	20.0%
Other Expenses (Interest)	0	-561	-613	-1,661	-1,526	-1,204	-2,066	-1,729	-1,189	-1,114	-	268.3%	-	-16.3%	-31.2%	-6.3%
Net Income	\$-5,832	\$7,133	\$-985	\$3,017	\$5,806	\$2,977	\$4,540	\$4,442	\$2,349	\$-2,673	-	-36.4%	-	-2.2%	-47.1%	-

Note: Operating revenues and expenses have been adjusted to include reimbursables as a credit to expenses rather than as revenues. This is the normal practice in railroad accounting.

Exhibit II-2

Contribution After Variable Expenses
(thousands of dollars)

	1985	1990	1991	1992	1993	Change: 1992 to 1993
Passenger						
Revenues ¹	\$4,344	\$6,973	\$8,173	\$8,460	\$8,855	\$395
Expenses	4,752	5,080	4,987	5,335	5,400	65
Net	(408)	1,893	3,186	3,125	3,455	330
Freight						
Revenues	51,978	53,313	52,485	52,401	47,527	(4,874)
Expenses	28,865	31,782	35,701	37,877	39,469	1,592
Net	23,113	21,531	16,784	14,524	8,058	(6,466)
Total Net Contribution	\$22,705	\$23,424	\$19,970	\$17,649	\$11,513	(\$6,136)

¹Passenger revenues of \$8,460,000 shown for 1992 compare to \$9,076,000 in the Annual Profitability Study. This difference apparently represents revenues that in prior years were shown separately as Miscellaneous revenues with no associated variable expenses.

Freight Traffic and Revenues

ARRC's revenue ton-miles declined by 1.5 percent in 1993 (as shown in Exhibit II-3) but remained at a relatively high level compared to the 1980s. Revenues declined by 9.4 percent. The revenues shown, which include those of ARRC's Seattle service, are those that are left when the towing and other incidental expenses of the Seattle barge service that ARRC took over in March 1993 are deducted. Mercer found that the decline in total freight revenues can be traced largely to the impact of the Seattle barge service in that the additional revenues ARRC obtained when it took over the Seattle barge service were exceeded by its increased expenses.

Exhibit II-3

ARRC Freight Traffic

	Revenue Ton-Miles (millions)	Revenues (millions)
1980	271	\$21.7
1985	807	52.0
1990	1,104	53.3
1991	1,055	52.5
1992	1,108	52.4
1993	1,091	47.5
Percentage Change:		
1980 to 1985	197.8%	139.6%
1985 to 1990	36.8%	2.5%
1980 to 1990	307.4%	145.6%
1990 to 1991	4.4%	1.5%
1991 to 1992	5.0%	0.2%
1992 to 1993	1.5%	9.4%

Passenger Traffic and Revenues

Passengers handled by ARRC declined in 1993 by 4.2 percent from passengers handled in the pervious year (see Exhibit II-4). All of this decline was the result of the cruise lines moving from Whittier to Seward. ARRC carries all of the cruise passengers calling at Whittier, as the Shuttle provides the only access from Whittier. However, most cruise tourists calling at Seward are bussed to and from Seward. The bus trip takes less time and is easier than the train to coordinate in loading; however, the train trip offers an outstanding scenic experience.

Revenue per passenger increased primarily due to the change in mix of passengers caused by the loss of the low-fare Whittier cruise passengers and to the growth in the relatively high-fare Seward business and a small increase in ARRC's Express fares.

Exhibit II-4

ARRC Passenger Traffic

	Passengers (thousands)	Revenues (thousands)	Revenue per Passenger	Revenues as Percentage of Total Freight Plus Passenger
1980	151	\$1,549	\$10.26	7%
1985	257	4,344	16.90	8%
1990	437	6,973	15.96	12%
1991	471	8,173	17.35	13%
1992	473	8,460	17.89	14%
1993	453	8,855	19.54	16%
Percentage Change:				
1980 to 1985	70.2%	180.4%	64.8%	
1985 to 1990	70.0%	60.5%	5.6%	
1980 to 1990	189.4%	350.2%	55.5%	
1990 to 1991	7.8%	17.2%	8.7%	
1991 to 1992	0.4%	3.5%	3.1%	
1992 to 1993	4.2%	4.7%	9.2%	

Operating Expenses

ARRC's operating expenses remained steady in 1993 compared to the prior year. As shown in Exhibit II-5, a \$1.4 million decrease in maintenance of equipment expenses was offset by a corresponding increase in G&A and MOW expenses.

Exhibit II-5

Comparison of 1992 and 1993 Components of Operating Expenses
(millions of dollars)

Expense Type	1991	1992	1993	Difference
Transportation	\$20.7	\$18.2	\$18.5	\$0.3
Maintenance of Way (MOW)	14.2	15.2	15.8	0.6
Maintenance of Equipment (MOE)	12.8	14.6	13.2	(1.4)
Subtotal Operations Division	47.7	48.0	47.5	(0.5)
G&A	11.9	14.4	15.3	0.9
Total	\$59.6	\$62.4	\$62.8	\$0.4

Note: As is the practice with the major U.S. railroads and many regional railroads, the following adjustments have been made: 1) Care hire expenses are included in Maintenance of Equipment rather than Transportation; 2) The depreciation expenses associated with each expense type have been included in this exhibit; 3) Casualty changes are included in Transportation; 4) Reimbursement revenues have been used as credits to expenses in each of the expense types; 5) To maintain consistency with 1993, all but \$200,000 of work equipment expenses in 1991 and 1992 have been transferred to MOW.

With somewhat lower traffic, the railroad's operating costs per gross ton-mile climbed 4.3 percent (see Exhibit II-6). Excluding the one-time fourth quarter charge of \$1.8 million, the railroad's cost per gross ton-mile would have remained steady at 1992's level. In fact, since 1990 ARRC has held its costs near 2.3 cents per GTM, which is an accomplishment in light of a 7 percent increase in the rate of railroad cost inflation.

Exhibit II-6
ARRC Operating Expenses

	Gross Ton-Miles (millions)	Operating Expenses (millions)	Operating Expenses per GTM	Operating Ratio (percentage)
1980	925	\$33.2	3.6	129.9%
1985	1,952	55.4	2.8	97.1%
1990	2,633	59.9	2.3	96.8%
1991	2,460	59.6	2.4	96.5%
1992	2,740	62.4	2.3	100.9%
1993	2,590	62.8	2.4	110.4%
Percentage Change:				
1980 to 1985	111.0%	67.0%	20.9%	
1985 to 1990	34.9%	8.1%	19.9%	
1980 to 1990	184.6%	80.5%	36.6%	
1990 to 1991	6.6%	0.5%	6.5%	
1991 to 1992	11.4%	4.7%	6.0%	
1992 to 1993	5.4%	0.6%	4.3%	

Section III: Findings of the Management Audit

This section presents the basic findings of Mercer's analysis of ARRC. Those topics where special effort was made are presented first; these include reviews of:

- The railroad's freight businesses and marketing/sales organization, with emphasis on the Seattle barge service because of its impact on the railroad's finances last year and its immediate importance to the well being of the railroad
- The railroad's passenger service, with emphasis on the costs of the services provided by the Passenger Department compared to its revenues
- ARRC's recent restructuring efforts

Following the special topics are comments on Mercer's routine review of the administration and operations functions of the railroad.

Review of ARRC's Basic Freight Business Components and Supporting Marketing and Sales Organization

In past audits Mercer has noted how vulnerable the railroad is to a relatively small traffic base with a few dominant customers. Recently the railroad's interline business was affected by the withdrawal of Crowley Marine Services as operator of the Seattle service, which forced management to make critical decisions on how to maintain its service to and from the lower 48 states. The ARRC marketing and sales organization has responded over time to new conditions in the interline and other businesses with organization and staff changes. The purpose of this section is to, first, review the current financial results of the new ARMS service and compare it with what was projected in the 1993/1994 audit review; second, examine the integrity of all major segments of ARRC's freight business; and finally, see how the Marketing and Sales Department is prepared to handle challenges facing the organization in the various lines of business.

Review of the Seattle Barge Service

This section examines the current status of the Seattle barge service between Seattle and Whittier that ARRC assumed responsibility for operating in March 1993. The performance this service had been expected to achieve is compared with what has actually taken place. Options and possible alternatives to improving or discontinuing this service are also discussed.

Review of Performance

Prior to March 1993, this service had been provided independently by Crowley Marine Services. Late in 1992 Crowley gave relatively short notice to terminate service, and ARRC management was convinced the sudden withdrawal from the Seattle market could cause some harm to the railroad's customers and jeopardize much of its profitable interline business. ARRC then acted to assume control of the service and hire Crowley for a period of five years to perform towing services and supply barges, thereby converting what previously was an independently operated

Crowley service (with Crowley taking most of the risks) to a contractual relationship with ARRC assuming all of the risks and Crowley assured a return with no risk.

Management's decision to take over the service had been justified in part by a number of expected benefits, most of which were reviewed in last year's audit:

- The railroad's profitable interline traffic to and from Seattle would be preserved.
- ARRC's control over the service would provide single control over what had been a two-party operation, and thereby enable a more flexible, customer responsive, and "seamless" transportation service for its customers.
- ARRC would be able to provide a faster response in pricing for customers, particularly in competing for the very limited southbound market.
- ARRC could exercise better control over scheduling the barge trips for service improvements.
- The service preserves a second outlet for railcar business and provides ARRC with some continued competition with CN's Prince Rupert service.

Management also believed that this arrangement could reduce the overall costs of providing the Seattle service.

In contrast to these expected benefits, Mercer was concerned in last year's audit that the financial risks associated with the service would be overwhelming and tax the capability of management to deal with them.

A review of 1993 financial results and a similar review of the results of the first full 12 months of ARRC control over the operation shows that management has been unable to make any progress in restoring its profitability. Conversely, the financial results have thus far been a disaster. As shown in Exhibit III-1, the results in 1993, which included two months of Crowley operations and 10 months of ARRC operations, were about what was expected – a loss of \$0.8 million. The results for the first full 12 months of operations, from March 1993 to February 1994, show losses further expanding to \$1.7 million and which, compared to 1992, represent a negative impact of almost \$5 million. Furthermore, Mercer has examined operations during the last six months, from March 1994 through August 1994, and has no reason to believe that the results will be any better in the second full year.

In conclusion, the combination of lower than required northbound loadings, insufficient increases in southbound loadings, and extensive weakness in per-load revenues all led to substantial 1993 losses that are worsening. Although the service benefits ARRC expected from taking over the Seattle barge responsibility were largely realized, ARRC was unable to capitalize on these benefits to preserve the financial contribution this service has made in the past. Under existing conditions, ARRC appears to have an insurmountable task to regain reasonable levels of profitability or even break-even. From Mercer's analysis, the service would have to be more than 100 percent utilized northbound or increase its southbound business from about 700 loads to near full capacity to achieve a contribution near that realized in 1992.

Assessment of Markets

Mercer reviewed ARRC's markets with the vice president, the AVPs, and their staffs. Discussions centered on the commodities that ARRC handled as well as services ARRC provided. In addition, the company's business plan clearly described ARRC's businesses.

ARRC has two basic lines of business:

- Interline, local carload services, and TOFC/COFC
- Unit train and block services

Interline, Local Carload Services, and TOFC/COFC

Interline, local, and TOFC/COFC constitute 27 percent of freight revenues while unit trains and block services make up 73 percent.

This line of business accounts for 26.6 percent of ARRC's freight revenues and 13.7 percent of its carloads. The interline traffic represents a particular quandary: This business presents an immediate opportunity for the railway to increase business volumes and revenues, but on the other hand, the Seattle portion is draining operating income from the railway. The variety of activities supporting the interline and other segments (two barge operations, a local pipe and log business, a number of railroad operated and/or funded transload operations, and a TOFC/COFC contract operation) also represent a major management challenge for ARRC.

Evaluation of Marketing and Sales Capabilities

Mercer reviewed the railroad's marketing and sales effort to evaluate the following:

- Adequacy of goals and objectives for each line of business
- Marketing & Sales department's understanding of its business and its reaction to business opportunities and problems
- Technical capabilities of the department
- Adequacy of information utilized by the department

- The current Marketing & Sales organization structure and its appropriateness for the railway

Adequacy of the Goals and Objectives for Each Line of Business

Any M&S organization needs clear goals and objectives from which to construct the Company's business plan. The ARRC's M&S department prepares a comprehensive market plan that provides in-depth information such as:

- Marketing:
 - Current market conditions
 - Competitive conditions
 - Pricing strategy
 - Government influences
 - Market plan
- Operations:
 - Current operations
 - Operations analysis
 - Service

This Market Plan provides a good basis from which a concise set of goals and objectives can be formulated. However, while the information in this plan has been used to outline goals and objectives for the company, it appears to be more of an "academic document" than a day-to-day guide for action. In practice, the M&S department pursues informal and individual strategies. There are often shared and practical, but outside the bounds of the business plan. During the year, goals and objectives tend to become reactive rather than proactive.

These observations are not meant to diminish the real accomplishments of M&S last year, such as the Mapco contract renegotiation. Nevertheless, the ARRC was reacting to someone else's agenda.

A good market plan must be regularly reviewed and continually updated to ensure the goals and objectives for the company are based on current and anticipated market and operating conditions.

Understanding ARRC's Business, and Reaction to Opportunities and Problems

Mercer reviewed the major markets with the Marketing & Sales staff and found that the staff has reacted practically and objectively to the majority of the business opportunities and problems.

The key elements of Mercer's findings were as follows:

- M&S personnel displayed a good understanding of the ARRC's existing business.
- The M&S department demonstrated a solid knowledge of customer demands, both in service and equipment requirements and in the competitive prices needed to move their products.
- The M&S department appeared to be aware of most marketing opportunities that might be available to the Railroad.
- Members of the department had ideas and were willing to express them; intellectual bankruptcy is not a problem in this department.
- M&S personnel were very concerned about the ARMS operation and its potential impact on the company.

The individuals interviewed reflected competency in their areas of responsibility, and Mercer observed an eagerness to become more involved with the Marketing & Sales activities of the company. Concern was expressed that responsibility was too fragmented; M&S Operations and M&S Support generally have to concur on rates, and this slows responses to customers and opportunities. Mercer notes that fragmented responsibility also lowers accountability for results.

Technical Capabilities of the Department

Based on the interviews with the M&S staff, Mercer feels that the technical skills and personal commitment required for an effective M&S organization are present on the ARRC. In any railway M&S organization, Mercer would look for the following:

- Experience in the railway industry
- Understanding of customer economics and markets
- Education, both formal and OJT
- Analytical and personal skills

The ARRC Marketing Department, like any organization, includes people with a variety of skills and experience ranging from adequate to excellent. Nonetheless, the total package constitutes a technically capable and solid organization.

Information Available and Extent Utilized by the Department

Mercer observed that key information is not dispensed or readily made available to the M&S staff. Major M&S initiatives tend to be handled by the VP with input flowing from the staff but not enough flowing back in return for comment nor sufficient staff participation in the outcome.

In addition, there is a problem with the distribution of data such as budgets, customer, and traffic information to the individuals who require the material. While the data are available, they are not in a form that is easily developed or adequately circulated.

As the saying goes, "you can't manage what you can't measure." Mercer found that most of the budget and marketing information managers need to perform their jobs effectively is collected but not easily retrieved from the computer system. As a result, the information flow most closely reflects an individual's knowledge and comfort with the computer system or members of the computer department. The computer department should prepare and distribute reports on budgets and traffic on a regular basis.

The Current M&S Organization Structure and Its Appropriateness for the Railway

Mercer has previously observed that the ARRC's Marketing & Sales organization is structured in a traditional manner. The current organization, which is similar to what one would have found on most railways in the 1960s and 1970s, comprises the following:

- Operations Group (Sales)
- Support Group (Pricing)
- Customer Service (part of the Support Group)
- ARMS

In previous audits, Mercer has stated that this structure should be examined for its appropriateness in the current competitive market. Specifically, Mercer has been and remains concerned about the following:

- That the distinction between sales and pricing dilutes the effectiveness of the people in the M&S department in terms of their dealings with customers and other railways
- That the shared responsibility for establishing a program creates an environment where accountability is difficult to determine

This structure also reflects the traditional distinction between marketing as revenue generation and operations as solely responsible for the movement of the freight. Most railways have abandoned this type of structure, since it does not properly support operations or necessarily handle its own responsibilities efficiently.

In reviewing the ARRC's Marketing & Sales organization structure and its role within the railway, Mercer looked at the type of organization one would expect to find, given the type of business that the ARRC currently carries.

For example, the ARRC business previously described breaks down into two basic categories:

1. Interline, local, and intermodal
2. Bulk and block train business

These are two very different types of business and these businesses each have the following characteristics:

- **Interline, local, and intermodal:**
 - Multiple transactions over a wide geographic area (e.g., rail-truck transfers, multiple rail connections, equipment supply issues, the barge service at Seattle, the loading operation at Houston, etc.)
 - Wide variety and large numbers of customers
 - Immediate, intense, and often low-priced competition
- **Bulk and block trains:**
 - Minimal transactions based on single-train and single-customer services
 - A limited number of customers who can support the heavy investments required to move their products
 - Competition that, because of the large investments required, tends to price and enter markets carefully

Given these types of business and their very different operating, customer, and competitive characteristics, Mercer expected the ARRC's traditionally organized M&S structure to handle these two lines of business independently. This was typical while traditional railway marketing & sales organizations were making the transition to the currently popular business group structure. For example, most traditional railway organizations that handled coal had a Coal Department, and Mercer would anticipate a similar formal organizational emphasis on ARRC's core business. But this was not the case.

What we found instead was a "mutating" organization. The M&S staff below the VP have informally adapted their traditional organization to the current markets out of need. As a result, the organization has acquired some specialization based on the characteristics of the markets serviced.

- The Support group has invested time and effort with the Operating Division in improving, monitoring, and promoting better equipment utilization. This reflects recognition of the fact that the promotion of good equipment utilization practices is essential to generating better margins on the core business and that this is a joint responsibility of M&S and the Operating Division.
- The Sales group has become more involved in pricing ARRC's services, after the reduction in Support personnel slowed the pricing work. For very practical reasons, the "healthy dynamic tension" that is used to defend the current organization structure critiqued in past audits is disappearing.

Out of necessity, the M&S staff has informally begun to adapt itself structurally to the categories of business outlined above. A lack of specific pricing people and the resulting delay in setting prices has encouraged Sales (Operating) with Pricing's (Support) concurrence to help establish rates, especially in the highly competitive and fast-paced interline business. In addition, Support has recognized the need for margins on the core business to be improved through better equipment utilization and has worked well with the Operating Division in an effort to accomplish

this goal. Mercer concludes that senior management needs to recognize that its M&S structure, driven by a talented and concerned M&S staff, is already evolving toward a "business group" orientation.

Left completely out because it doesn't "fit" logically into any one group of the M&S Department is the Seattle organization. The combination of distance and traditional organization in a non-traditional railway line of business has resulted in this group's receiving limited advice and direction. As a result, the skills, knowledge, and energy evident in this group are not being fully exploited. This group needs to be "placed" with someone.

Finally, Mercer feels that as a result of its evolving structure, the M&S organization is not as effectively fulfilling its role in terms of setting goals and priorities for the company. Further, its capable members are trapped in an unstable structure that often frustrates their creativity and certainly reduces their effectiveness. A better organization structure for M&S would yield the ARRC better results.

Review of Passenger Services

In 1993, ARRC's passenger patronage was down for the first time since the federal transfer in 1985. However, passenger revenues were up slightly due to increases in passenger fares and other charges, and the contribution of the service after direct costs of operating the service continue to be significant.

The performance of the railroad's passenger service should be examined in the context of the following components:

- ARRC's own commercial service on the Express and its train service between Seward and Anchorage
- An unsubsidized public service obligation to operate the Whittier Shuttle and Hurricane local service

Some observations with respect to these services follow.

Commercial and Public Service

The railroad's ability to market commercial and public services has met with mixed results.

The commercial and public service ridership appears to be leveling off and in certain areas is decreasing. In fact, ridership in 1993 was at the lowest level since 1989. This trend presents an urgency either to make the current passenger sales efforts more effective or to reduce the cost of rendering these services.

In reviewing this situation, the audit team found a number of commendable factors:

- The Passenger Department appears to make good use of its advertising funds and of the travel and entertainment industry conventions.

- A good training program appears to be in place, and the performance of on-train service personnel is well monitored.
- The appearance and condition of the rolling stock used in the trains appears to very good.
- The on-time performance of the key trains has improved in 1994.
- ARRC has a good relationship with tour industry representatives and has special trains to provide them with a first-hand experience to observe what the railroad has to offer.
- The railroad is aggressive with operating special trains for skiers and works cooperatively with other organizations.
- While the installation and implementation of a new reservations system has some initial problems, it should provide benefits and have some excess capacity that could be used to serve other travel organizations at a profit.
- Efforts to extend service beyond the traditional shoulder season appear promising.

Mercer found two significant deficiencies in the management of the passenger services, however. The first was a lack of definitive goals and objectives and a lack of any effective and meaningful measurement tools to determine how the department is meeting those goals and objectives. The types of detailed control information needed to make an accurate evaluation of the various services are:

- Performance measures such as passenger car-miles of the different services, and expenses such as on-board services incurred by specific trains. With accurate car-mile and train expense information, management can track the economic impact of different on-board service policies and can calculate the impact of the administration costs on the effectiveness of the department.
- Information on the proportion of seats sold on a wholesale basis to other organizations. With this information, management can determine how much it is spending (on a seat-availability basis) on retail marketing and how much this is costing in commissions.

The second deficiency was with the lack of day-to-day and continuing financial management and accountability within the administration of passenger service. While the quality of service appears to be very good, control over the costs of providing the services is inadequate or even non-existent. There is no evidence of an established discipline to monitor and control expenses by means of a standard budgeting procedure. The budget data exists but is not used currently in the marketing and sales hierarchy. For example, the 1994 budget was developed in normal fashion in 1993. But through the end of August no effort was made to obtain actual expenses for any of the months in 1994 to compare with the budget and determine variances so action could be taken. This is just one example of the lack of fiscal responsibility in the department. This occurred in spite of a full-time accountant assigned to the department. Some other examples of the lack of fiscal responsibility were:

- The department was unaware of the monthly cost to operate the reservation system and how this compares to commissions being earned.

- Management was unaware of the source of the monthly commission income.
- The department did not have readily available information on how much block space is sold at a discount to wholesalers (e.g., the glacier boats or other tour interests).
- The department did not appear to have a developed program to employ yield management techniques.

Mercer is also concerned about the effectiveness of the new reservation system. As outlined in last year's audit, this system was suppose to provide a number of benefits, such as: increasing ridership and revenues by reducing lost reservation inquiries; permitting better space management; broadening its marketing reach by linking to nationwide travel agency reservation networks; employing modern yield management methods; and improving opportunities to develop full-service travel packages with other tour operators to generate increased commissions. Unfortunately, the system was installed too late in the season to obtain full benefits, and there is no information that would permit Mercer to measure the system's success in attaining these benefits.

Review of Operations

The Operations Division ensures the safe, efficient, and timely transportation of passengers and freight and is responsible for over three-fourths of the total costs of operating the railroad. The Operations Division expenses (Exhibit II-5) have been relatively stable over the three years shown, at about \$48 million. Over this period general inflation in the United States has increased by about 3 percent annually while railroad inflation has increased by only 1 or 2 percent. This has been accomplished by general improvements in productivity, increased load per car for gravel and coal, and a significant drop in the unit price of diesel fuel.

The Operations Division consists of four separately organized groups:

- A management and administrative group, responsible for controlling overall operations and providing necessary supportive services such as budgeting, safety, and environmental coordination and oversight
- A transportation group, responsible for the movement of trains, the operation of yards, and traffic control
- A mechanical group, responsible for the maintenance of rolling stock, i.e., locomotives, passenger cars, and freight cars
- An engineering group, responsible for the maintenance and upkeep of the railroad's track, structures, and other property

Mercer looked at the management practices and performance in each of these areas, particularly at changes that have taken place or were being considered since the previous audit. Mercer interviewed appropriate operating staff and reviewed various materials provided; our observations on each of the groups are provided below.

Management and Administration

The Operations Division is managed by the Vice President of Operations and includes a support staff of about 17. Overall management of the Operations Division appears to continue to improve, especially as demonstrated by its ability to meet the challenge of a stagnant traffic base and reduced revenues. Mercer found that Operations management is using up-to-date information on the railroad's performance and appropriate approaches to monitor and control operations. At the time of the audit team's visit a new train and car management system was being implemented that should enhance the quality of real-time information available for management. It was unclear, however, what specific enhancements will be realized. Bruce Carr was assigned to assist the Operations Division in resolving these needs.

An important improvement in making service more responsive to the needs of the customers and in controlling the costs of providing that service was the institution of weekly service planning meetings between Operations and Marketing and Sales. These meetings have proven invaluable for both departments, allowing the exchange of information on current and proposed operations and business demands, as well as mutually beneficial decision making.

Environmental

Mercer last reviewed the railroad's environmental activities in the 1992-1993 Management Audit and expressed several concerns, which management has since addressed. One of the most important changes was to bring this responsibility under top management jurisdiction, which was accomplished two years ago with the addition of an environmental professional reporting to the Vice President of Operations. This group, including the manager, consists of a staff of four with responsibilities for the entire ARRC environmental program, including providing for the remediation/cleaning up and monitoring of contaminated sites, managing the appropriate disposal of waste generated by the railroad, keeping current on regulations for waste disposal, and providing required documentation and reports.

Mercer is not in a position with this audit to comment on the suitability of specific actions undertaken by staff, but the general overall effort appears to greatly exceed the practice of railroads its size in the lower states. Mercer surveyed a number of similar railroads in the lower states and found most had no separate environmental group or experienced individuals dedicated to this function. This clearly demonstrates the commitment ARRC has made to environmental concerns. Some recent activities are:

- Negotiating settlement of the \$1.8 million fine imposed by the Environmental Protection Agency for storing waste for a period over 90 days. This included follow-up inspections, as well as discussions with and presentations to state and federal officials. Final settlement was a fine of much less than the original \$1.8 million and a commitment to complete the following supplemental environmental projects:
 - Purchase additional buildings to store waste
 - Undertake an independent pollution prevention assessment at Anchorage Yard
 - Provide training to citizens of Alaska about environmental regulations