

ALASKA'S

MARINE HIGHWAY SYSTEM

Fast Ferries Join the Fleet

R. J. DOLL

Captain Doll is Director, Southeast Region, Alaska Department of Transportation and Public Facilities.

In an era when small government is the ascendant philosophy, and taxpayers are "in revolt," publicly-funded ferry systems may be challenged to sustain themselves. Several of the largest ferry systems in North America are experiencing financial difficulties. Although the public takes ferry service for granted, funding is uncertain. Typically, the search for means to continue operations occupies the attention of management and, as a result, day-to-day operations suffer, revenues decline, and the challenges magnify.

One strategy to overcome these circumstances is to go "high tech." But how does that apply to a ferry system? Will the public accept it? The Alaska Marine Highway System (AMHS) is about to find out.

Point of Departure

From the Gold Rush of 1898 until the mid-1950s, Alaska's southeast coast was its population center. The Alaska Steamship Company and other commercial carriers provided the only substantial connections with the outside world. Air travel routes were not well established and the few primitive roads did not reach many of the islands and glacier-bound communities.

When "Alaska Steam" ended its passenger service in 1954, Alaskans felt truly isolated. The closing was due, in part, to a Federal Maritime Board decision to end passenger service subsidies; however, subsidies continued for airline service. Also contributing to the company's losses was the union's refusal to adjust crew size to the decreased passenger loads in winter.

After attaining statehood in 1959, Alaska gave priority to the creation of a waterborne transportation system that would respond to public requirements rather than commercial imperatives. A June 1944 study had reached four main conclusions (1):

1. The route should connect Haines and Skagway, Alaska, with Prince Rupert, British Columbia.

2. A highway would require many short ferry runs to cross the bays and channels on the route.

3. This highway-ferry combination would cost an enormous sum.

4. If many short ferry runs would be necessary, why not consider one continuous ferry route from Prince Rupert to Haines and Skagway?

That is how the AMHS was built. There have been many modifications to its ships and routes over the years, but the AMHS remains a long-haul, high-capacity, 24-hour, 7-day, year-round, deep-water ferry system. Intentionally or not, it is modeled after its Alaska Steam predecessor. Passengers and vehicles can embark in Bellingham, Washington, or in Prince Rupert, and travel 3,000 miles to Dutch Harbor in the Aleutian Islands. The route also traverses some of the world's most spectacular natural scenery, which travelers can view in comfort. In 1965, the route was the subject of a 43-page photo feature in *National Geographic* (2).

Passenger and vehicle demand is highly seasonal (Figure 1), and earnings reflect the seasonal demand (Figure 2).

The numbers for passengers and vehicles have declined from their peak during the Persian Gulf War, when the war and international terrorism diverted many travelers to the relative security of U.S. tourism. The AMHS transports 104,000 vehicles and 350,000 passengers each year, earning an annual income of about \$39 million, or 55 percent of expenditures. This gap between revenue and expenditures is increasing despite steady or slightly rising ridership (Figure 3).

For many years, the AMHS operated an eight-ship fleet. One oceangoing ship sailed in southwest Alaska, and one "lakes, bays, and sounds" ship served Prince William Sound. The remainder of the lakes, bays, and sounds ships served the southeast, two on local "feeder" routes and the remainder on the main line from Prince Rupert and Bellingham to Skagway. In 1998 AMHS added another ocean-capable ferry, allowing a link across the Gulf of

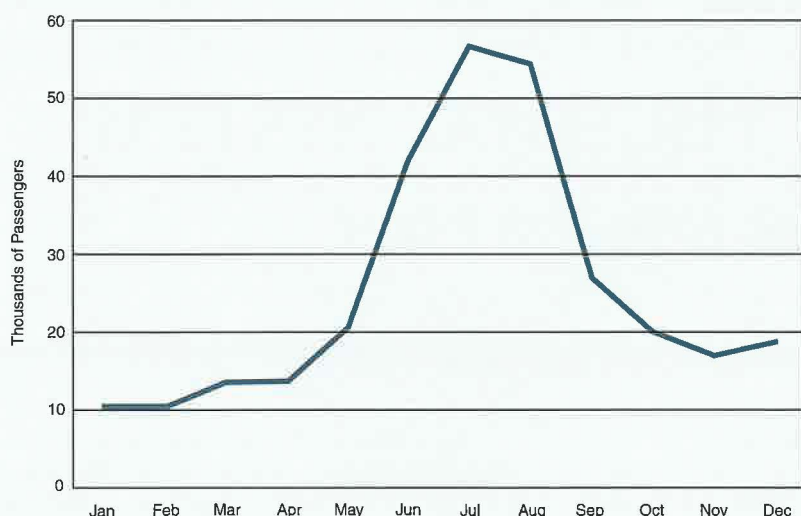


FIGURE 1 AMHS southeast passenger traffic, 1998.

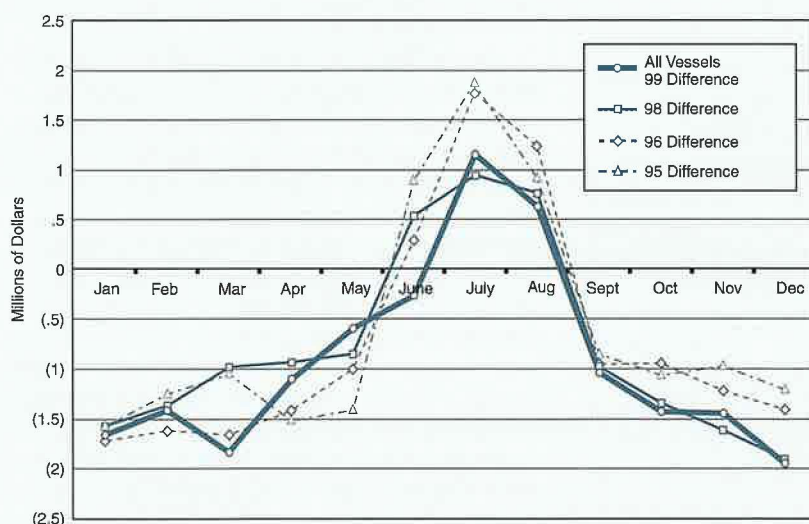


FIGURE 2 AMHS net operating earnings and losses by month.

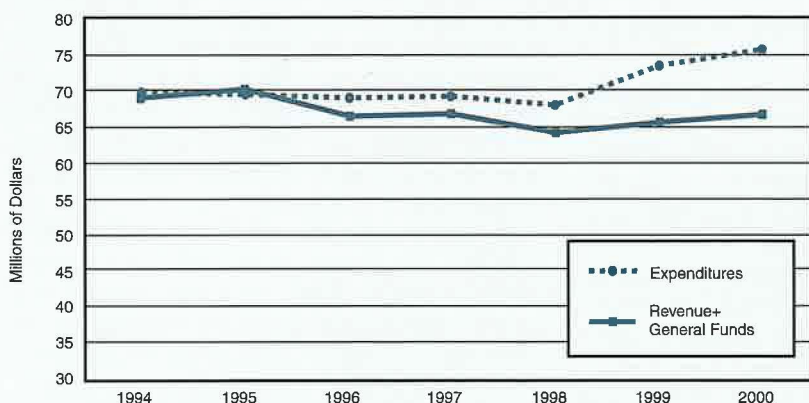


FIGURE 3 AMHS expenditures and revenues, 1994–2000.

Alaska between the southeast and southwest systems. Concurrently, one of the former mainline ferries moved to a summer-only shuttle service between Juneau and Haines-Skagway, another first.

A financial comparison of the four mainline ferries with the two feeders and the two serving the southwest demonstrates the revenue potential for each type of service (Table 1).

System Characteristics

In opting for a system to carry passengers from its southern terminus to any point along the coast of Alaska, AMHS planners avoided the costs, construction challenges, and delays involved in establishing shuttle routes. In the days before federal transportation funding had reached its present scale, and in a regulatory and labor climate which was more forgiving, this choice is not surprising. However, in the 40 years since, these original decisions have become less appropriate and less appealing.

AMHS at the New Century

A ferry system designed in the 1960s necessarily incorporates features that now are less than optimum from regulatory, social, financial, and political perspectives. Some of these problems could not have been anticipated, some were anticipated but were accepted, and some have gained significance over time. Although no one of these problems is critical, taken together they necessitate a new direction.

Long-Haul Service

Passengers riding a ferry on a through-voyage from one end of the route to the other require service provisions throughout their stay on board. They must have food and lodging as well as provisions for medical needs, recreation, and safety. In effect, the ferry must serve as a mobile hotel. This is a labor-intensive function, and costs are not easily recovered, since each passenger uses the hotel features to a different degree. Tourists and vacationers seek comfortable travel, but business and short-haul travelers or residents are less willing to pay for conveniences. This creates antagonisms among users, reflected in decreased levels of public support.

Ship and Route Design

A ferry that travels extended distances along the Alaska coast in winter as well as summer must be robust in design and construction and efficient in fuel consumption and storage capacity. AMHS ferries are dependable but are limited to a speed of 16 knots. Although an AMHS ferry can handle heavy weather, its draft may be limiting. Because a bow opening would impose other limitations, the

ferries cannot offer “through loading” over the bow and stern, like conventional ferries. As a result, loading can be tedious—stowage must account for multiple destinations over several days and for vehicles ranging from personal automobiles to 70-foot motor homes. This in turn leads to loading delays and passenger frustration.

Difficult currents and tides often require the ferry to make adjustments en route, so that the times of arrivals and departures are not only inconsistent from day to day but sometimes occur at inconvenient hours.

Service Concerns

There also are other scheduling issues—for example, a linear route means that weekend and holiday service may not be available for a given community. Critical comparisons of the service each community receives are inevitable. Additionally, with several ferries sometimes moving in both directions along a 1,000-mile route segment, conforming to random tide constraints, and experiencing loading or off-loading delays, sometimes a ferry will depart or arrive at the same port within hours of another. Optimizing schedules is a challenge.

So too is the seasonal nature of travel in Alaska. The relatively large size of the long-haul ships inhibits the system's ability to adjust capacity to seasonal demand. Reducing total fleet numbers in the off season leads to fewer port stops per week, antagonizing residents. Moreover, operating a large ship less frequently does not equate to larger loads per trip; those who must travel when ferry service is not available find alternatives.

Regulatory Regime

The transportation industry is highly regulated. It was among the first to feel the hand of the federal government in the 19th century and its constant development in capacity and speed has maintained

TABLE I AMHS Major Cost Sectors and Revenue Sources

	Average per year, 1993–1998				FY 1999
	Expenses*	Revenues	Loss	Rev./Exp.	Rev./Exp.
SE Mainline	\$33.6	\$31.3	\$(2.3)	93%	86%
SE Feeder	10.2	3.4	(6.8)	33%	32%
Southwest	8.5	4.3	(4.2)	51%	53%

* Expenses do not include shoreside and vessel overhead. All dollar figures are in millions.

public scrutiny. For a time, the maritime world escaped this regulatory attention. But a series of maritime disasters in the 1960s and 1970s directed attention to the transport of crude oil and then to roll-on-roll-off (RO-RO) ferries.

The sinking of the *Herald of Free Enterprise* in the English Channel and the *Estonia* in the Baltic Sea are two of the most prominent deep-sea ferry incidents that have prompted more stringent regulations. The International Maritime Organization (IMO), under the aegis of the International Convention for the Safety of Life at Sea, holds wide-ranging authority over deep-sea shipping, which is essentially an international business. RO-RO passenger ferries have received particular attention, and the U.S. Coast Guard has adopted and applied the IMO rules. Because it is an international carrier, serving Canada and crossing Canadian waters, the AMHS must adhere to the world's highest standards. Although the system probably would have adopted those same standards on its own, the net effect has been increased costs.

For example, until recently, open lifeboats and open inflatable rafts were acceptable means of escape from a ship in danger of sinking. Lifeboats can load from the embarkation deck, but passengers were expected to descend flexible ladders down the side of the ship to enter a raft, possibly at night and in adverse weather. Annual maintenance of a simple



M/V *Matanuska* traverses some of the world's most spectacular natural scenery on Alaska Marine Highway System.

In Haines, Alaska, heavy motor homes board the M/V *Malaspina*.



lifeboat or raft costs approximately \$3,000. The systems required today, including escape chutes and other sophisticated devices, cost about \$20,000 in annual maintenance per ship.

Societal Changes

A few more general societal changes affecting the AMHS deserve mention:

- ◆ Alaska's demographic center and political power has shifted to the northwest. The extensive land and air transportation needs of more remote, inland communities increasingly compete for federal and state funding.

- ◆ The public expectations for long-distance travel are based on airlines. Daily service, minimal travel times, and frequent departures are the standards many use to evaluate travel options. Most passengers, whose primary goal is to maximize time at their destination, tolerate virtually any inconvenience that air travel can impose. Today it is a novel idea that travel itself should be enjoyable or that it might be considered part of the destination.

Shuttle Service

In the spring of 1999 the state's Department of Transportation and Public Facilities completed the Southeast Alaska Transportation Plan (SATP), an intensive study of options for improving the area's transportation. The SATP proposed a series of ferry and road links, much like the plan discarded in 1960. But with advances in high-speed ferry technology, as well as in road construction, the planners had tools that were not available earlier.

In particular, high-speed ferries could overcome the distances between communities. In addition, the capacity would be more appropriate for winter demand, overnight accommodations would not be necessary, and daily schedules would be predictable. These features would translate into lower crew costs and an increased ability to adjust capac-

ity to demand. A comparison of the operating costs of a conventional AMHS ship, the *Malaspina*, with those of a high-speed ferry on the same shuttle route is revealing (Table 2).

The most significant differences are crew costs and vehicle capacity. Savings in crew costs result from the fast ferry's ability to deliver passengers to their destination in less than one day without the need for extensive services and to return the crew to its home port each evening. In Alaska, speed is not a matter of passenger convenience—it is the only practical way to overcome the distances between ports and to decrease the costs involved. But the primary benefit of a combined conventional and high-speed system is the ability to adjust capacity to seasonal demand.

However, smaller ferries cannot accommodate peak-season volumes and therefore cannot earn the revenues of large-capacity vessels. They also cannot offer the opportunity to see the scenery of the southeast coast at a leisurely pace, a major attraction for visitors and residents. Again the solution is in the capacity-demand adjustments that fast ferries make possible.

TABLE 2 Cost Comparison of Fast Ferry and *Malaspina* in Shuttle Service

	Fast Ferry	<i>Malaspina</i>
Crew size	10	39
Crew hours	10	24
Vessel capacity	35	88
Wages and benefits	\$4,392	\$21,158
Night shore support	\$1,133	—
Fuel	\$2,515	\$2,011
Supplies	\$976	\$3,118
Total cost/day	\$9,016	\$26,287
Cost/day/vehicle	\$258	\$299

Shoulder Season Adjustments

A useful model for the AMHS plan had been in place for several years. The M/V *Columbia* is assigned exclusively to the Bellingham-Skagway route, one of the most popular and most lucrative for the AMHS. The ship operates only from May to October, on the route for which she was designed, and earns \$2 million above operating costs, the only ferry in the system consistently in the black (4). If the AMHS could find a way to replicate this example, it might secure its financial future. A fast-ferry shuttle system would provide that opportunity.

AMHS in 2005

With the mainliner *Columbia* as an operating model and fast ferries supplying both basic inter-community service and seasonal flexibility, the AMHS of the future will offer the following:

- ◆ Year-round fast-ferry shuttle service between communities, 5 days per week, on predictable, day-light schedules;
- ◆ Short road connections between shuttle terminals;
- ◆ Long-haul, mainline service year-round from Bellingham to Skagway;
- ◆ Long-haul, mainline service in the summers with two ships from Bellingham and one or more from Prince Rupert; and
- ◆ Cross-gulf service regularly in the summer and less frequently in the off-season.

Conclusion

Shifting from a labor-intensive to a high-technology system entails major capital costs. With a high-speed, low-capacity vessel, operating costs depend on the speeds employed, the number of cycles per day or week, and the cost of fuel. But if ferries are operated to meet service requirements imposed without regard to traffic demand and revenue potential, the expected savings cannot be realized.

Speed is key to revitalizing AMHS operations and finances. It is the only technology that can overcome the distances between ports in Southeast Alaska. Speed will enable daily service, allowing passengers to reach their destinations in a single day; it also will reduce operating costs. The cost savings from overnight crews will more than offset the costs of increased fuel consumption.

However, if the temptation to extend the long-time operating plan cannot be resisted, costs will skyrocket. A 40-hour week with round-the-clock operations necessitates two crews at more than twice the shuttle-ferry crew costs and frustrates the



KAREN LEW

concept of overnight maintenance. Nonetheless, continued operation of the mainliners is essential for generating revenue, particularly from commercial cargo. Achieving the two goals of reduced costs and improved revenues is basic Business 101. The new plan should reduce public funding of AMHS by approximately \$10 million by the end of 2010—a goal that should gain wide support.

In recent years the Marine Highway Fund, established at \$40 million in 1992, has compensated for shortfalls in appropriations and revenues; but the current rate of withdrawals will exhaust the fund by 2003. Time is running short for AMHS and for the communities it serves.

M/V *Columbia* travels Bellingham-Skagway route exclusively, one of the Alaska Marine Highway System's most popular and lucrative passages.

References

1. Downing, Richard A. Remarks to the 30th Annual Convention, Associated Boards of Trade of Central British Columbia and Its Alaska Affiliates, September 16, 1961.
2. *National Geographic*, Vol. 126, No. 6, June 1965.
3. *Southeast Alaska Transportation Plan*. Alaska Department of Transportation and Public Facilities, Juneau, Alaska, March 1999.
4. *Annual Financial Report, Fiscal Year 1999*. Alaska Marine Highway System, Juneau, Alaska.

Related Websites

Alaska Marine Highway System:
www.dot.state.ak.us/amhshome.html
"The Poor Man's Cruise":
msnbc.com/news/367804.asp?cpl=1#BODY
Alaska Scenic Byways:
www.dot.state.ak.us/scenic/
Southeast Alaska Transportation Plan:
www.dot.state.ak.us/external/state_wide/planning/seplan.html
State of Alaska:
www.state.ak.us