Case 11

Harbor Delivery Service

Harbor Delivery Service (HDS) is an over the water delivery service operating in several large port/metropolitan areas. Each branch office has from 5 to 15 boats in its fleet. Currently, each branch office purchases its boats locally based on the branch manager's preferences. This has resulted in each branch having a mix of brands and models and both diesel- and gasoline-powered units in some ports. Maintenance for this mixed fleet is a major headache, and costs seem out of control. To better utilize resources, the company has been repositioning boats to avoid unnecessary purchases and idle resources. This has been far from a resounding success, as the receiving locations are not prepared to maintain the boats if they differ from those it currently has. The branch managers inevitably find major faults with the boats transferred into their site. Additionally, this causes the sites to need both diesel and gasoline refueling facilities, with the inevitable confusion and mistakes. The various types and brands also make it difficult to create a "brand image." HDS has decided to centralize procurement of boats and to standardize on brands and fuel types.

The task of standardizing the fleet has been assigned to a team consisting of the chief operating officer and three branch managers. The team has identified the size and configuration of boat that best meets the general needs of HDS but have been unable to agree on a common power unit. A poll of the branch managers finds that five out of ten branch managers prefer the gasoline option due to its higher speed, while two out of ten are indifferent to the choice of power unit.

Marketing has expressed a preference for diesel power units. They claim that the customers perceive diesel units as less flammable and support this preference with data that shows that insurance premiums are $500 more per year for gasoline-powered boats. Marketing cannot show that demand has been impacted by power unit choice.

You have been tasked with recommending the appropriate power unit. To support this task, you have constructed the following table (Table 11-1) based on the specifications of the two boats under consideration.

Table 11-1 Boat Specifications

	Gasoline	Diesel
Purchase price	$76,586	$97,995
Engine size	350 hp	300 hp
Average speed (manufacturer's estimate)		
Knots (nautical mile per hour)	21.1	17.4
Fuel consumption (gallons per hour)	26	17
Fuel capacity (gallons)	300	300

The boat manufacturer (the only difference in the two boats is the engine) has supplied an estimate of the average speed of each unit and the fuel consumption based on this average speed. Since the boats are used in harbors and for fairly short runs, the higher speed of the gasoline engine is valued at only $50 per day. When not in use, the gasoline engines will be turned off, while the diesel units would idle and burn fuel at the rate of 1 gal per hour. Both units are seen as adequate to meet the delivery schedules/requirements of HDS.

Your investigations into maintenance costs have determined that the diesel unit requires $9000 in annual maintenance (mainly for the cooling system), while the gasoline engine unit has an annual cost of $6000. Oil changes are $25 for the gasoline unit and $57 for the diesel unit. Oil changes occur every 100 hours of engine use.

Diesel is estimated to run $2.95 per gallon while gasoline runs $3.15 per gallon. The branch offices are located adjacent to a fueling/service dock ran by another business unit of HDS's parent company. The boats are docked at the fueling facility overnight and each evening the tanks are topped off before the boats are turned over to the maintenance crew for

service and cleaning. Thus, nightly refueling stops cost $15, but if refueling must be done during the day it costs $55.

The units will typically cover 200 nautical miles in the course of the day. Crews are changed every six hours. The delivery service operates 18 hours per day 7 days a week.

The diesel units, if purchased, will be kept in service for 4 years before being sold for $48,000 each. The gasoline units will be sold after 3 years of service for $38,000.

HDS's minimum attractive rate of return (MARR) is 18%.

Option

How many nautical miles per day must be traveled to change your recommendation?