

## **ASSIGNMENT 1**

### **FLEET PLANNING DECISION**

Turkish Airlines is considering the immediate lease of 2 wide-body aircraft for a period of 2 years, to provide additional capacity on a known set of high demand long-haul routes while awaiting delivery of new B777-300ER aircraft. The three candidate aircraft types for this leasing arrangement are shown on the Top Down Fleet Planning Worksheet THY Fleet.XLS.

All three alternatives are each wide-body, twin-aisle, twin-engine aircraft requiring two cockpit crewmembers, although their seating capacities, ages and performance characteristics differ. The relevant operating cost characteristics for the aircraft are summarized in the worksheet – these cost estimates are considered to be accurate for this fleet planning decision. All of the candidate aircraft have performance characteristics that make them feasible for the routes in question.

The leased aircraft are to be flown on stage lengths that average 7400 km, with an average block-hour time of 9.72 hours per flight leg departure. THY estimates that the leased aircraft should be able to achieve an 11.5 block hour per day utilization rate, regardless of which type is chosen.

The average (unconstrained) passenger demand per flight on the routes to be served by the leased aircraft has been estimated to be 241.2 passengers. THY's best estimate of the average yield that it can obtain on these routes is \$0.063 per RPK for this demand level, with an average sales and distribution cost equal to 9% of the gross fares. Our forecast of fuel costs during the leasing period is approximately USD\$1.65 per gallon. Finally, due to seasonal variability in demand, we cannot expect any aircraft to achieve an average load factor of greater than 85%.

(A) Note that in the base analysis, the average passenger load per flight for the B767-300ER has been limited to 228.7 passengers. This is to ensure that the average planning load factor for the B767-300ER does not exceed 85%.

What are some of the reasons that we might want to restrict average planning load factors to less than 85% in this analysis? That is, what are some of the operational and economic factors that would make it unrealistic for an airline to operate at a consistently high average load factor?

(B) Evaluate the sensitivity of the results to changes in input assumptions (perform each analysis separately, using the BASE values given below). That is, determine the amount of variation in each input factor required to make all aircraft alternatives unprofitable, holding all other factors constant. Does a 10% variation in fuel cost, demand, or passenger yield have the greatest impact on estimated profit? Which factor is more likely to vary enough in the real world to affect profitability?

- (i) Fuel cost per gallon (BASE = USD\$1.65)

- (ii) Forecast average passenger demand per flight (BASE = 241.2)  
*Note: Make sure to re-enter the BASE fuel cost per gallon of \$1.65 before beginning Part (ii).*
- (iii) Forecast passenger yield per RPK (BASE = \$0.063)  
*Note: Make sure to re-enter the BASE passenger demand per flight of 241.2 before beginning Part (iii).*

(C) What additional aircraft performance and operational issues that might affect the final decision as to which aircraft type should be acquired for this relatively short time horizon? Based on these additional considerations and your analysis above, what would be your recommendation to THY management with respect to this leasing decision? Which aircraft type do you recommend?