

### **ASSIGNMENT 3**

#### **ISTANBUL – KUALA LUMPUR ROUTE FLEET ASSIGNMENT**

Turkish Airlines (hypothetical) flight TK62 operates non-stop daily from Istanbul (IST) to Kuala Lumpur (KUL), departing at 1840. During last summer's peak months (June-August), this flight was operated with an Airbus A330-300 aircraft, configured with 28 J-class (Business) and 261 Y-class (Economy) seats. THY observed the following loads over 90 operations of TK62 during the schedule period June-August 2015:

	J-Cabin	Y-Cabin
Seating Capacity	28	261
Average Load (passengers)	22.7	232.9
Standard Deviation of Load	7.5	78.1

During the fleet assignment process, THY needs to make a decision as to which specific aircraft type should be assigned to this IST-KUL flight for the 2016 peak June-August schedule period. We assume that the demand levels and distributions of summer 2015 will once again be valid for summer 2016.

You are provided with the following pieces of information:

- (1) Table of relevant aircraft and market characteristics (below, and also available in TK62 ISTKUL.xlsx).
- (2) Boeing Spill Table ( $k=0.35$ ), provided.

---

#### **Aircraft and Market Data**

---

##### **AIRCRAFT COSTS**

TYPE	J SEATS	Y SEATS	FOC(\$/HR)
A330-200	22	228	\$6450
A330-300	28	261	\$7300
B777-300ER	28	309	\$7740

##### **FLIGHT LEG DATA**

	KILOMETRES	BLOCK TIME
IST-KUL	8380	10.6 hours

##### **NET REVENUE PER PAX\***

J-CABIN	Y-CABIN
\$675	\$310

\*NET REVENUE is the average-one way fare prorated and allocated to this flight leg, net of all variable carrying costs (traffic and passenger servicing, promotion, sales and distribution)

(A) Use the Boeing "Spill Table" to estimate the demand factor and the spill factor for the J and Y cabins of TK62, *given* the observed average loads and an assumed coefficient of variation of unconstrained demand equal to  $k=0.35$ , and enter these numbers into the spreadsheet. The spreadsheet will compute mean unconstrained demand and standard deviation of unconstrained demand for you.

Then, compute the average spill per flight and spill rate (percent of unconstrained demand spilled), for both the Y and J cabins.

(B) Use the flight leg spill modeling approach (and the Boeing Spill Table provided) to determine which aircraft type would have the **highest contribution to profit** for the June-August 2016 schedule period. That is, assuming the mean unconstrained demand that you estimated in (A), use the Boeing Spill Table ( $k=0.35$ ) to estimate the average load factor, average load, and expected spill per flight for each cabin under each alternative aircraft. The spreadsheet will calculate demand factors and profitability for you.

(C) Based on your analysis in (B), which one aircraft type do you think Turkish should use for this flight leg in summer 2016? What **additional considerations** (including aircraft rotations, crew requirements, scheduling issues, network impacts, operations) would have to be incorporated into the decision as to which aircraft type Turkish should assign to this leg?