Airport Management and Operations (AMO) Class
Airport Design Project
Supplemental Assignment Information

Background Scenario Information for the Airport Design Project

Your team is responding to a Puget Sound Regional Planning Commission (PSRCP) Bid to develop a Reliever Airport for the Puget Sound Region.

The PSRCP Bid parameters include the following details that your plan must accommodate for the Reliever Airport:

- Support flight operations for large scheduled air carrier commercial traffic - Boeing 737s, Airbus 320s and comparable commercial aircraft such as Horizon Airlines Turbo-Prop aircraft, CRJs and ERJs.
- A combined Air Force military unit that will have 12 USAF F-22s, 10 C-130Js and 4 H92 rescue helicopters.
- An Army Reserve Helicopter Unit supporting 4 Heavy Lift and 6 Medium Lift Helicopters (who will share the ramp space and maintenance facilities with the Air Force Helicopter Detachment).
- Homeland Security Support Aircraft - Three Cessna Citation jets (6 to 8 passenger).
- General aviation (GA) traffic including Air Taxi, Air Charter, Flight Instruction, Very Light Jets (VLJs) and FBO operations.

The anticipated combined flight operations will create sufficient traffic flow to justify an FAA Tower operating 24/7 – the Military will pay for extended hours of Tower operations, military unit will have an air defense and air-sea rescue missions along with other missions.

A significant segment of the local business community in the vicinity seeks to create a viable aviation business center with several (perhaps many) commercial aviation businesses such as aircraft, engine, and avionics maintenance facilities, aviation parts and spares distributors, Light Sport Aircraft (LSA) manufacturers, and other businesses similar to Paine Field and Boeing Field. There are a few vocal minorities who oppose another airport, but the PSRCP is willing to spend the political capital to create this airport and has advised you that if needed, PSRCP will exercise Eminent Domain Authority through State and County Agencies and Boards to acquire the necessary real property to create the airport. At this stage in the planning, the PSRCP has simply directed you to come up with the best proposal you can to create a basic initial design.

The largest aircraft likely to use this airport will be:

- Boeing 737 aircraft (all models), Airbus A320s, CRJ and ERJ regional commercial jet aircraft.
- C-17 and C130J military aircraft that provide logistics support for the Air Defense fighter unit the C-130 unit and the helicopter units.
- General aviation corporate aircraft (Gulfstream 3, 4 and 5 jets, Hawker Siddeley jets, Lear jets, etc). The airport will be the permanent home for about 20 of these types of corporate jet aircraft, about 250 General Aviation aircraft with an expected increase to 350 aircraft over the next 20 years.
Puget Sound Planners anticipate that the new Reliever airport will become operational in 10 to 12 years. Within the next three to five years, the State, the FAA, the applicable County, and the local communities near the airport will make a permanent agreement about the location. The key stakeholder organizations have agreed to move ahead with preliminary planning and have contracted with you to compete for the initial plan. A second group of specialists will review your plan and adjust your plan as the work for the new airport moves ahead. Everyone is committed to creating this airport – the region desperately needs more airport capacity, as SEATAC will reach maximum capacity in 2016-18.

Your plan must consider all facilities the airport will need, including how to alter existing infrastructure or create new infrastructure or (highways, rail lines, power and cable lines, water and sewer lines, etc.) to create the Air Side-Land Side interfaces so that passengers can get to and from the airport in an expeditious manner and the all components of the airport can conduct operations safely and efficiently while making a profit.

A crack crew of attorneys and engineers will work with your plan to coordinate with the agencies and organizations that will accomplish the changes for the infrastructure adjustments you deem necessary. Of course, the fewer infrastructure changes your airport requires, the better. On the other hand, the region needs a first rate Puget Sound Region reliever airport with all the amenities. Making the new reliever airport attractive to the flying public is an essential selling point that the airlines and the flying public demand – AND you must plan GREEN.

In your plan, consider and address all issues surrounding and affecting creation of the airport and operations at the airport. One very important point which the PSRCP has emphasized is green sustainability. **Your plan must create an airport that is environmentally sustainable.** **Think GREEN, plan GREEN. Make GREEN happen at your airport!** Also, the economic planners believe the airport should be self-sustaining within the first decade for both commercial and general aviation operations. The PSRCP indicated in the bid information that of the $2.4 billion cost, they believe the Puget Sound community will be able to provide 5% of the funds, with the DOD providing 40% of the remaining 95% and the FAA will fund the rest. The local business community is very firm that this new airport will be completely self-sufficient within one decade after opening (both the Commercial operations areas and the General Aviation areas must be self-sustaining) so there will no further burden on the tax-payers.

Regarding changes or additions to infrastructure, justify your plan decisions with at least one paragraph for each infrastructure change (What kind of infrastructure, what kind of changes, and why). Be concise and to the point while providing enough rationale so the logic for the need for each infrastructure change is clear, comprehensive and coherent.

To accomplish this assignment, you may use an existing airport and expand the facilities of that airport, or you may select a new site that currently does not have an airport but has the “right” components of location, terrain, access to other transportation modes (road, rail, light rail, etc.) When you consider your locations, be sure to consider how the surface transportation will be part of your development plan.
Reliever Airport Concept Design Criteria

Your airport concept design must include:

- **2 runways and 2 helipads**
  - A VFR runway of at least 3500 feet length suitable for light aircraft operations
  - An IFR runway of at least 8000 feet length suitable for commercial air carrier operations, military jet operations and corporate jet operations
  - A general aviation helipad in a location that supports private and corporate helicopter operations
  - A military aviation helipad in a location that supports military helicopter operations

- **A Control Tower site** that offers optimum surveillance of the movement area on the airport, and as much of the airport airspace as is necessary to facilitate safe flight operations under Tower Control.

- **Taxiways and airport surface movement areas** sufficient to
  - Allow for efficient ground operations to and from runways from all ramps and other aircraft movement areas such as hangars, tie-down areas, parking areas, refueling areas, aircraft maintenance areas and other movement and non-movement areas.
  - Access to GA ramps, parking areas and hangars such that GA activity can occur without interfering with commercial and military flight operations
  - Access to and from military containment areas with consideration that the F-22 aircraft have an active Fast Reaction Interceptor mission (5 minute response time from alert notification to aircraft airborne and en route to the interception area)

- **A passenger terminal** of sufficient size and capability to handle
  - Up to 10 commercial aircraft operating to or from commercial gates simultaneously
  - With capability to expand to a max capacity of 25 commercial aircraft operating to or from commercial gates simultaneously

- **Ramp space** for the Government aircraft indicated in the planning scenario, and 300 general aviation aircraft of various sizes from Lears and Large Beech (KingAir, QueenAir) down to small single engine aircraft such as Cessna 172s as well as Light Sport Aircraft (LSA)

- **Hangar Space** for at least ½ of the aircraft based at your airport
  - At least 15 large corporate hangars (100 by 100’ hangars)
  - At least 80 smaller hangars (T Hangars, etc., 40 x 20)
  - Aviation Business Hanger space for A&P businesses, Repair shops, Paint Shops, etc. (size varies based on type of business)
  - Warehouse space at or near the airport

- **Address any Land-Side infrastructure changes** that the new airport will need in order to effectively and efficiently serve the public. Include surface transportation systems, utilities, fuel systems, and other systems to make using the airport effective and efficient for the flying public
Submission Requirements and Grade Point Distribution

- Credit for 100% = 2500 Total Points
- Extra Credit = Up to 300 extra credit points possible
- Total possible points = 2800 points

Written Report - Submit a paper copy and an electronic copy of the Written Report
Oral Report - Submit an electronic copy of the PowerPoint to accompany the Oral report
(Provide one paper copy of the Oral Report PPT to the Instructor prior to presenting)

Both the Written Report and the Oral Report with PowerPoint must have
A. (400 Points) - Airport Survey Today , May 2010
   Starting Point - Provide a brief explanation with supporting graphics, photographs, and other
   imagery so the audience will have a full understanding of the ‘starting point’ for your concept
design – what the airport or site looks like now. Also, See Additional Instructions below for
details on what to include

B. (1100 Points) – General Concept Plan.
   Concept Plan - Use brief explanations and sufficient supporting graphics, photos and
drawings to show the essential concepts of how you envision the new airport to look.
   Explain how you addressed each of the design criteria I listed above. Also, See Additional
Instructions below for more details on what to include. At a minimum your report and PPT
must include the following items:
   1. 200 points - Runway alignment and rationale for runway alignment
   2. 200 points - Terminal location and rationale for terminal placement
   3. 400 points – Ramps and hangar placements, and the rationale for placing civilian ramps,
hangars and associated on-airport businesses
   4. 200 points – Explanation with graphic support that lists modifications to the existing
environment, or airport infrastructure or infrastructure connecting the land side of the
airport to public communities whose populations will use the airport, including:
      a. Utilities- Water, Sewer and Power
      b. Fuel including resupply, storage tanks and distribution systems
      c. Land-side transportation Infrastructure to the airport (roads and include rail if a
         rail connection is possible, feasible and reasonable)
      d. Other infrastructure needs to support your concept plan
   5. 100 points – Provide explanation with graphics to show the future expansion you’re your
   rationale for how future expansion will occur (growth from 10 gates to 25 gates, added
ramps or other additions to the airport)

Additional Instructions regarding Diagrams, Photos and Graphics for the Concept Plan
*Indicate North Orientation on all diagrams, photos, graphics and imagery

Visual Aids supporting your Concept Plan (written and oral report) must include at least these
visual components. You may want to include more visual components as you deem necessary:

1. A circular view of the existing area from the airport center (or center of the site) out to
   approximately 5 NM in all directions on an 8” x11.5” page
2. A chart or diagram that shows the terrain near the airport (or center of the site) out to
   approximately 15 NM in all directions on an 8” x11.5” page
3. Existing Airport Overview showing how the airport or site is today (may 2010) on an 8” x11.5” page

4. New Airport Overview - diagram showing your entire airport in the future on an 8” x11.5” page

5. Airport Overview Overlay showing how your concept design fits over the existing airport, or existing surface area on an 8” x11.5” page

6. Runway Diagrams that shows each Runway and the Clear Zones for each Runway - Use an 8” x11.5” page for each runway.

7. Taxiway Diagrams that show the Taxi flows for each Runway’s directional operation. Use the Instrument Runway as the Primary Runway. Also, show the taxi flow for the VFR runway – Use an 8” x11.5” page for each taxi flow. The taxi flow should show ground movement flow for each runway direction to include movement to and from all ramps and major parking areas.

8. Air Traffic flow - Show the movement of aircraft for each VFR aircraft flow including VFR traffic to the Instrument Runway. Use an 8” x11.5” page for each Air Traffic flow direction. Use the Standard Pattern description in the FAR AIM for pattern shape, you may use Non-Standard patterns (right hand turns in the pattern). If your concept requires right traffic for landing, you must specifically explain why you intend to use non-standard patterns. Use an appropriate scale so you can contain Air Traffic Flows on an 8” x 11.5” page.

C. (500 points) - Organization Chart
For the Airport management team, use “wiring diagrams” and short explanations to provide an overview of the Airport Staff you believe the Airport Manager will need to operate the Airport you have conceived.

1. 100 points - Include all the personnel you think are necessary to operate the airport
2. 200 points - Provide a minimum of one line of text to explain the duties of each function in the org chart. Include the number of people working in each function- you may use Consultants for some functions like Airport Master Planning, Airport Legal affairs etc
3. 200 points - Link the organization chart to the financial projection

D. (500 Points) – Financial Projection - Financial data regarding the airport
For the operation of the Airport, provide an overview of the financial structure of airport operations. Include sufficient graphic elements so the audience can understand how the airport will operate financially. (See next page for financial projection requirements)

1. 100 points - Financial Summary (revenue and cost summary on one page)
2. 200 points - Revenue Projection – Expanded Description
3. 200 points - Cost Projection – Expanded Description
To assist in preparing the Financial Projection
Include these cost and revenue elements in your financial planning

Costs
1. Wages, Salaries and Benefits * Presume Benefits are Wages x 25%  
   a. You can lump categories of labor to simplify the math  
   b. Show enough differentiation so your math makes sense  
2. Vehicle Fleet and Equipment  
   a. You can lump categories of vehicles and equipment to simplify the math  
   b. Show enough differentiation so your math makes sense  
3. Utilities  
4. Operations and Maintenance (O&M)  
5. Services (depending on site and particulars)  
6. Professional Services and Miscellaneous  
7. Other costs not otherwise included thus far that you think are essential to include, depending on site and particulars

Revenue
1. Airfield Operations  
   a. Leases  
      i. GA  
      ii. Businesses (FBOs, Repair shops, etc.)  
      iii. Airlines  
   b. Landing Fees  
   c. Fuel and other sales  
   d. Ramp Services  
   e. Reselling Utilities (if you resell)  
2. Terminal Operations  
   a. Business Leases  
   b. Concession fees  
   c. Parking  
   d. Other business

Do well, make me proud!

Curt

Curt Scott  
Aviation Instructor- Airport Management and Operations - AVIA 214